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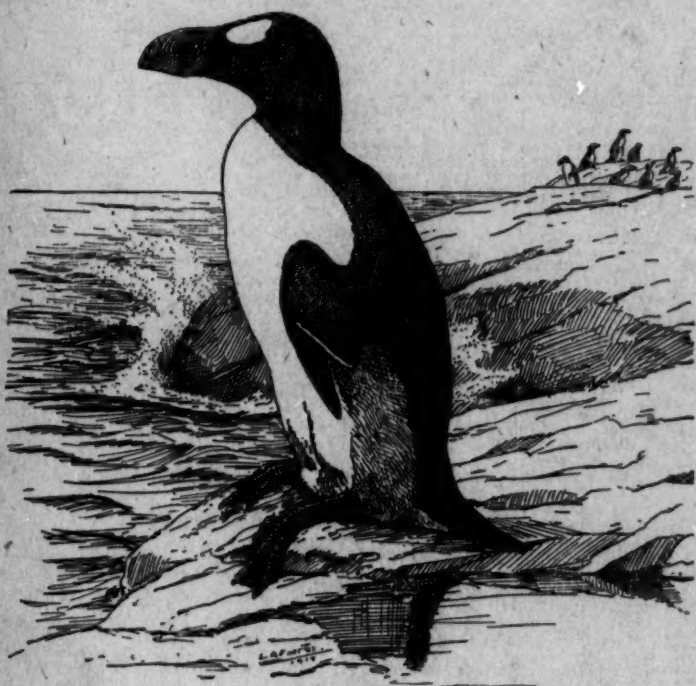
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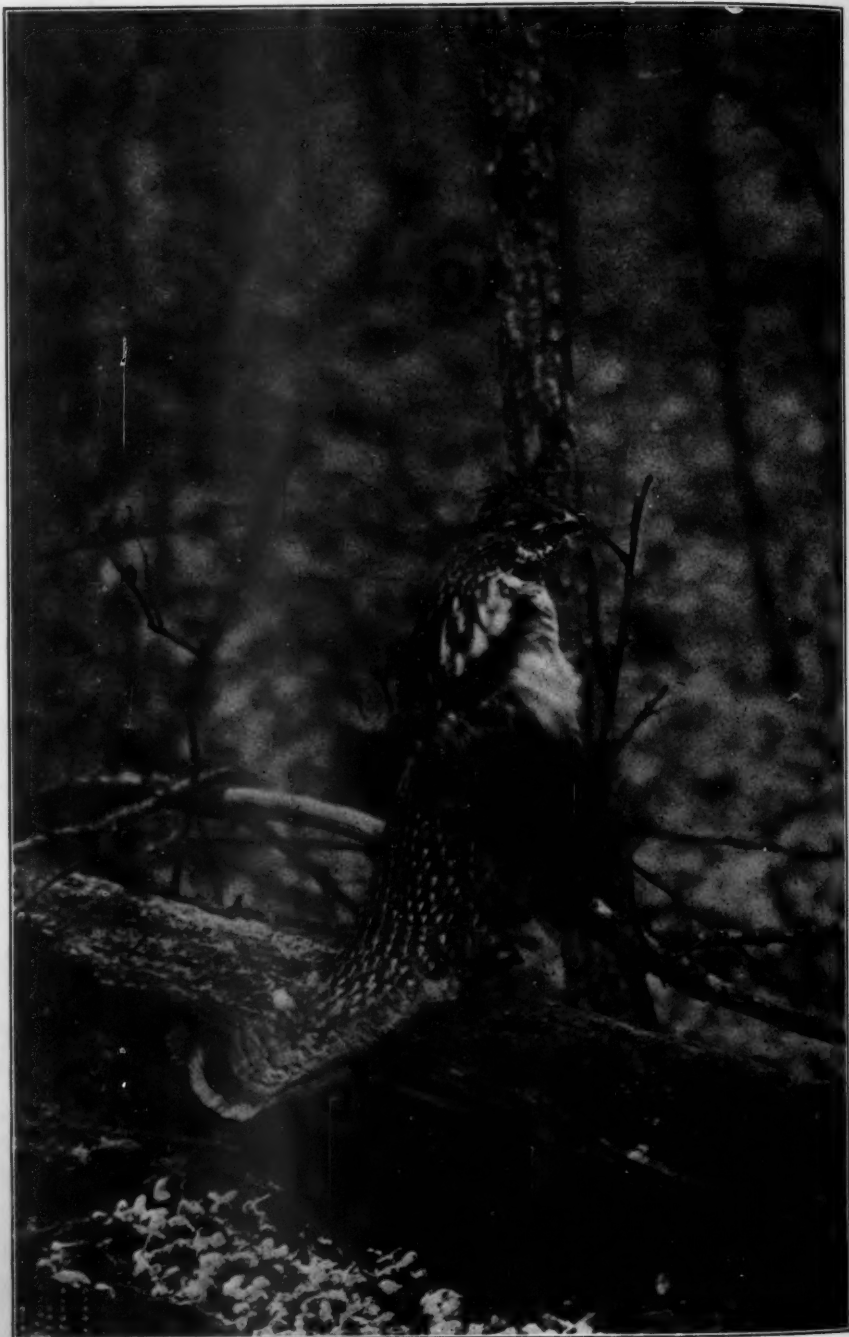


Photo. by H. E. Tuttle

RUFFED GROUSE DRUMMING

THE AUK:

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SOME NOTES ON THE DRUMMING OF THE RUFFED GROUSE.

BY H. E. TUTTLE.

Plate XI.

SOME controversies die hard, and the discussion of the drumming of the Ruffed Grouse is one of them. Happily the observations made by Professor Hodge on his domesticated Grouse settled many mooted points, authenticated the testimony of accurate observers, and lopped the hydra heads of many legends that had long abused the popular intelligence. These notes, taken from my field diaries, are not offered as containing much that is new, nor as a final word on a subject long under discussion, but rather as the faithful record of a quest pursued.

UPPER PENINSULA, HURON MOUNTAIN, MICHIGAN, *April 7-13, 1910.* After crawling some distance toward the log on which he was strutting, I watched a cock Grouse drum at a distance of twenty feet. When about to drum the feet were shifted uneasily for a moment, as if to get a firmer grip of the log, the tail was spread and held in a horizontal position. At the beginning of the first wing beat the tail was dropped, and acted as a brace, across or along the log, according to the way the bird was standing. There were three quick preliminary wing beats, then the breast and neck were swelled perceptibly, the feathers on the throat being "ruffed"

the wrong way, the ruffs were slightly distended, and the first loud wing beat was begun. After drumming the tail was held erect for a moment and the ruffs were spread — a beautiful pose.

On moving my hand from behind the stump where I was concealed, he threw up his ruffs, spread his tail into a fan, puffed out his breast, trailed his wings, and with lowered crest walked up the log, turning and hissing. Afterwards he walked off the log and began feeding.

I watched this bird and one other drum more than a dozen times. There were variations in the strutting and in the raising or lowering of the crest, but otherwise the performances were identical. In this region drumming cocks were numerous, the logs on which they drummed being in most cases not ten feet off the trails. The birds were tame and easily approached.

SIMSBURY, CONNECTICUT, *April 23-24, 1910.* I spent the night of the twenty-third and morning of the twenty-fourth on the ground about one hundred yards from a well used drum log. I had set up my camera during the late afternoon, and because the bird was too shy to be approached by crawling, I adopted the expedient of sleeping at the end of my shutter thread.

The Grouse drummed from one-fifteen in the morning till after two o'clock, when I went to sleep, and was still drumming at three minute intervals when I woke at four. He may have rested while I slept, but I woke to the sound of his drumming. He drummed twelve times in thirty minutes, from one-fifteen to one-forty-five. It was rather weird to hear a Grouse drumming in the dark. A bright moon was shining, but the air was misty. A Whippoorwill sang. I woke again at six o'clock, but the Grouse had gone.

SIMSBURY, *May, 1910.* During May in the woods beyond the hill swamp I crawled to the upturned end of a tree behind which a Grouse was drumming. After the bird had drummed three times I ventured to peek around the earthwork and was surprised to find the bird's tail braced across the log about ten inches from my face. The temptation to grab it and tweak out a feather almost overcame me with laughter, but I was eager to hear the bird drum again. I was disappointed at being behind him, where I could not watch his wings and breast, but it was obvious that this was the only position where I could hope to remain unseen. As it

was I retired behind the breastwork. He drummed again. The sound is comparatively faint when heard at close range, and difficult to describe. The silky rustle of the stiff wing feathers on the air is almost louder than the first "beat." "*Fiffump fump, Fffump — Ffump — Fump —*." The first three, which are very faint, can best be imitated by accentuating the "f" sound as the breath is expelled, like an exhaust pipe.

Suddenly he became aware of my presence, and with an explosive series of "Quit-quits" he flew to the low branch of a tree, about six feet above my head. There he continued to scold for some time, until grown tired of watching him, I rose to my feet, and he rocketed through the second growth like a bullet.

It has always been my experience that if I have been discovered by a Grouse, when lying at full length on the ground, the bird, though alarmed or annoyed, rarely takes flight, but usually indulges in argument.

SIMSBURY, *April 15, 1918.* Today I stalked a cock Grouse that was drumming on the old toboggan slide log, but as I made my last advance he saw me at the same instant that I saw him. He stood stiffly, just as he was when he ceased to drum, all five feathers of his crest separately erect and forward, his ruffs showing plainly, so that I could even see the metallic green edges of the plumes, but he was evidently worried, and turned his head slowly away. Then without warning he whirred off, to alight on the side hill about a gun shot distant.

I noted particularly how short the bill seems when the crest is erect, as compared with the longer appearance that it has when the feathers lie flat to the head, as in the brooding female. In the afternoon I set up my camera within four feet of the log in the hope of a chance shot on the following day.

April 16. No luck with the Grouse. He either did not drum, or drummed elsewhere.

April 17. I secured a very fair photograph of the cock Grouse. The morning was overcast and the light very poor, and as I had set the shutter for a fiftieth part of a second I did not expect to be able to distinguish much on the plate; but, though underexposed, the bird shows up plainly and in sharp focus. He drummed just before I reached the end of my shutter thread (about forty yards

from the camera and concealed from the bird by a little rise of ground) and I spent ten anxious minutes wondering if he had heard me and become alarmed, or whether he had seen the thread tremble as I took hold of it. At the three preliminary drum beats I slowly pulled the thread, but there was so much slack to take up that the shutter did not go off till just before the "roll."

April 18-May 1. A series of failures followed. On two occasions the shutter was sprung during the night, either by a branch blown against the thread by the wind, or by some one who like myself enjoys wandering from the beaten path. Rain precluded two other attempts, and the Grouse, becoming shy, sought another log some five hundred yards to the east, where after following his booming challenge I discovered him during the last days of April. The situation was more favorable to photography, for the log lay at the top of a ridge, broadside to the east, and caught whatever rays of light penetrated the second growth when the sun rose over the gap in the hills. After one partially successful attempt with a thread nearly one hundred yards long, and two failures, I decided* to pursue another method. If the Grouse would accept a blind, I should be able to choose the pose I most desired, suit the time of the exposure to the light conditions, and observe the drumming at fairly close range. I therefore set up and concealed my camera about four feet from the position on the log where the Grouse was accustomed to drum, and pitched my blind some twenty-five feet to the east.

May 2. At a quarter before four (sun time) I set out for the second growth ridge and the drum log of the Ruffed Grouse. The moon was still shining when I left the house, and I could see my shadow by its light as I crossed the home field. Robins were singing and an occasional Red-winged Blackbird flew overhead. Early as I was, I was too late, for with a whistled alarm note the Grouse flushed from the log as I made my way through the woods toward the blind. After a wait of forty minutes I heard him stepping over the dry leaves, and shortly after, the four preliminary wing beats boomed out. Up to this time I had not dared to move sufficiently to glance through the peek hole which I had provided, but now I did so, and saw the Grouse sitting hunched up in a little ball upon the log.

I had set the shutter for a fifth of a second exposure and had not planned to take the bird as he drummed, but the temptation was too strong, and as there was light enough (at five minutes after five) I waited till I saw the wings flash out in the first beat, and then pulled the shutter thread. His wings thumped twice while the shutter opened and closed, so that I had little hope of a clear-cut image on the plate, but the developed negative shows with what steadiness the bird holds himself during the drumming, for while the wings are blurred, the head is sharp and shows no trace of movement.

The Grouse preened himself twice, running his mandibles over his ruffs, the feathers of his rump and each long tail feather. Several times he turned about as if to go, and then like one overcome by an irresistible temptation, he would face about quickly, brace his feet on the accustomed piece of bark, and begin to drum. He left the log at six o'clock.

The performance did not differ essentially from others that I had witnessed, except that this bird took four preliminary wing beats instead of three. His crest was erect throughout the drumming, the ruffs partly, but not prominently, displayed. One of the Michigan birds whose drumming I observed, did not elevate his crest until the conclusion of the "roll."

May 3. Although I entered the blind at three-forty-five, the Grouse flushed from the log. If he roosted there he must have gone to roost late, as I did not finish setting up my second camera till after seven o'clock of the night before.

As I sat in my blind waiting for the Grouse to return, a Whip-poorwill sang and either this Grouse or another drummed in the birch glade below the ridge. A Chewink called. There was a chorus of Robin's voices which almost drowned the hymn of a Hermit Thrush, but could not dampen the ardor of a Chickadee.

The Grouse did not return till four-fifty, when I heard his heavy footfall, and the scratching noise made by his toe nails on the log as he ascended it. Walking a few steps along the log until he came to the spot where a loose piece of bark offered a convenient foothold, he struck a pose. The wings flashed out, hung limp, and flashed out again. There was a pause in which he seemed to gird his loins for the blows that were to follow, then beat followed beat till the

outlines of the wings were lost in the ecstasy of the "roll." I waited till five-fifteen for my first picture, and on the first sign of uneasiness on his part (significant of the fact that he was about to drum), I made the thread taut. At the first shift of his wings, I pulled. He saw the movement of the thread and held the pose while the shutter clicked at one fifth of a second. I took the second picture with the camera set for a side view, at five-thirty, selecting almost the same pose. He again detected the movement and held his position. As soon as the shutter clicked he continued to drum. He seemed to take only a passing interest in the scream of a Red-shouldered Hawk, but manifested an unusual degree of pleasure or curiosity in the song of a Bobolink as it flew overhead. He cocked his head on one side and apparently watched the course of its flight. He noticed the slightest noises and would turn his head at the scratching of my pencil as I wrote up these notes, though the blind was twenty-five feet distant from the log. Occasionally, in the intervals between drummings, his breast puffed out and his head shot forward, as if he were being relieved of gas on his stomach or had the hiccoughs. (This happened once on both mornings.) He drummed every seven minutes, though the interval was sometimes longer, particularly if he had heard a suspicious sound. When alarmed he drew himself up and stretched his neck to its full height. Sometimes before drumming he acted as if he were about to leave, turned about and looked for a convenient descent to the ground. Then, as if reluctant to go, or as if determined on just one more performance, he turned, braced himself, and began to drum.

May 8. I arrived in the blind at two-fifty, and began my silent vigil. The Grouse appeared at four-twenty-five, hurried along the log, as if late for an appointment, and at once began to drum. He drummed four times by four-thirty, and seven times by four-forty-two. Just before the seventh time he dropped off the log, and I was afraid that I had lost my chance to photograph him, but he immediately returned to his post and drummed. I think he picked up a grub or some live food that had caught his eye.

After drumming the tail is flung up stiffly for a moment. I have never observed a more alert and watchful bird, and he seemed even more watchful on this morning than on previous occasions. At

five-thirty I took my first picture, from the front, springing the shutter just after the four preliminary wing beats had been followed by the first two of the faster series. The wings moved once or twice during the exposure, which resulted in a failure, being badly blurred. At five-thirty-two I made my second exposure, from the side, just after the Grouse had finished drumming. I thought that he moved, but the plate showed that he did not, and this exposure proved to be one of the best that I have made.

The Grouse had drummed twenty-seven times when the rain began at six-seven. I was curious to see if he would weather it out or take shelter. He drummed again, the ruffs well out, rising and falling on the pulsing breeze caused by the wings. The leaves in front of the log are frequently scattered by the force of the final outburst. He drummed again. It was raining in earnest now, and he was drumming in the pouring rain. At six-thirty he left the log and walked directly toward the blind, pausing about two feet away to turn and round it. He picked and ate the new green leaves of a blueberry bush, his beak making a most perceptible snap as he pulled them off. He walked as I have always seen Grouse walk when unconscious of observation or danger, the head carried quite low, the tail folded and horizontal. His crest of course was lowered. After plucking the blueberry bush he began pulling at a laurel with which I had concealed the blind. He then walked up and pecked at the material of the tent itself. After circling the blind, still within two foot range, he returned to his log and at once began to drum. I could wait no longer, and retreated from the rear opening, keeping the blind between me and the bird until I was so far away that he should not be greatly alarmed when he first saw me. On catching sight of me he crouched quickly, his head low. For perhaps a minute he trusted to his immobility, then realizing that he was seen, his head shot up and he began to walk slowly down the log, his tail flirting nervously at each step. Taking a final look at me, he dropped off the log on the far side and immediately flushed with a roar of wings.

May 9. I crawled into my blind at three-thirty. Starlight, windy, cold and clear. The Grouse flushed from the log. Whip-poorwills were noisy. The Grouse reconnoitred for an hour, walking all around the blind. Finally satisfied that the coast was

clear, he abandoned his stealthy countermarches and long motionless delays, and hurried with careless steps to the log which seemed to draw him like a magnet.

I waited till five-ten for my first shot at one-fifth of a second, selecting the moment just after drumming, in the hope of catching him with his tail erect. At five-twenty with full sunlight I pulled the second thread at one twenty-fifth, endeavoring to picture him during the pause at the end of the four preliminary wing beats. (The first picture was successful, but the plate in the second had been badly fogged, possibly owing to a defective plate holder. There was no image on it.)

At six o'clock the Grouse was in full sunlight, bright enough for a fast exposure. He scratched his head with his toe, a pose that I should like to have caught. If luck had been with me, an exposure of a fiftieth of a second would have caught him at the end of a wing stroke, as there was a pause of slight duration at the end of each beat. He preened himself, then took one wing beat, and as if unsatisfied with his stance, turned about. The Grouse takes the first beat after partially squatting as if to steady himself. He then draws himself erect and takes four, the last of which often has as much force as the ones that follow. Here there is a slight pause, the upper breast is swelled, and the bird stands even more erect, the body being almost perpendicular, the head thrust forward. In this position the Grouse slightly resembles a pouter pigeon, and suggests Browning's description of Napoleon before Ratisbon, "with neck out-thrust, you fancy how —" The next beat comes with increased volume and is followed by about twenty strokes in ever quickening succession till the "roll." This is made up of ten or possibly twenty beats, rolled into a crescendo that frequently stirs the leaves ten feet in front of the drum log. At the end of the roll the bird stands on tiptoe, the ruffs are prominently displayed, the tail is erect at an angle of forty-five degrees and gradually subsides, first to a horizontal position and then to a position resting on the log, the ruffs slide back into their normal place, and the small feathers on the throat, which are ruffed the wrong way during drumming, become smooth.

The Grouse now hopped off the log on the far side, but the temptation was too strong, and he returned, facing west for a short

space. He then shook himself and hopped off the log again, making his way rather noisily through the woods.

May 12. I moved the blind to within six feet of the drum log. If it is too close to be useful for photography, I shall at least have had the experience of watching a Grouse drum at that range.

May 13. I arrived in the blind at two-forty-five. The Grouse was heard walking about at four and reconnoitred till four-thirty. He then came to the log, manifesting an unusual degree of caution and showed an attitude of great alarm after drumming once, crouching in an attempt to see through the peep hole of the blind. He then drummed again. At five-thirty-five I attempted my first picture, but the shutter thread had become tangled with one of the twigs on the top of the blind, and the Grouse hearing the noise and seeing the movement, instantly stopped drumming and sneaked off the log. I waited till seven, hoping that he would return, which he did. I took one picture with the camera in front at one hundredth of a second. The light was very dull, but I thought it was worth the chance. I tried again to pull the other shutter off, without success. The last time that the Grouse drummed he failed to get a good grip on the log, with the amusing result that the finale of the roll shifted him off his stance and whirled him half way around. (The picture was a bad failure, the plate being fogged and the exposure much too fast. It did show that one hundredth part of a second was fast enough to catch the moving wings.)

May 15. Dawn was not yet gray in the east when I stumbled through the second growth in the darkness and sought my green denim bush. The hour was two-fifty. The Grouse was more suspicious than usual and did not come to the log till four-forty. He drummed once, then left the log and came toward the blind. After walking some ten feet behind the blind, he returned to the log and drummed. An interval, then he drummed again. He was uneasy however, and soon dropped off the log, and passing close to the blind, departed to the rear. After ten minutes he began drumming on a log twenty yards to the east. I think the blind's proximity to the log was too great an obstacle, and in the afternoon I moved it back to a position twenty feet away.

May 16. I reached the blind at two-fifty. The Grouse spent

some time in coming to the log. He arrived on the scene at four-forty, flying down from a tree near the blind. At five-twenty-five I took my first picture, showing a watchful pose. He became alarmed, watched the camera for some time, and finally left the log at five-thirty-five.

May 21. Three o'clock found me in my blind, and at three-ten it began to rain. Rain fell for an hour, dwindled to an occasional drop, but began again at four-forty when the Grouse appeared. He drummed throughout a hard rain at longer intervals than usual. He left the blind at five-thirty, passing within two feet of my eye at the peep hole. I left the blind at six and picked up my cameras. The Oven-Birds sang their flight song before dawn.

It is easier to venture an opinion as to how the drumming sound is *not* produced than it is to make an affirmative answer to a question as to its source, and there has been so much discussion that I hesitate to make any unqualified statement at all. My observations, however, and what photographs I have been able to obtain, only confirm the testimony of Professor C. F. Hodge, who had the advantage of studying tame Grouse, and whose photographs of the drumming of these birds cover a series of poses taken from the front, the side and the rear. His observations and his photographs satisfied him that however the drum beat was produced, it was not caused by the wings striking together behind the bird's back. I do not think anyone who watched the drumming at close range, and from the rear, could be persuaded that the wings struck together behind the bird's back, while I am equally sure that observations made from the front or the side might easily give rise to such an opinion.

What is perhaps the best series of pictures of the drumming of a wild cock Grouse was published in 'Forest and Stream' for April, 1918. The author, Mr. Frederick K. Vreeland, during the course of the article describes the opening wing beat as follows: "A slight elevation of the wings and then they were thrown sharply backward, striking together behind the bird's back with a deep soft 'Boom,' returning almost instantly to the starting position, but with the feathers somewhat spread." Further: "But I did succeed in getting one shot which, while it shows the wings only as a

blur, I think will prove to the most skeptical that they did actually strike together behind the drummer's back." The photograph which is offered in proof of this statement is one taken from the side, so that the blur of the moving wings is shown as extending beyond the upright body of the bird and for about a wing's breadth to the rear. But how could any photograph taken from the side and showing the wings in profile prove whether or not the wings struck together behind the bird's back? The only photograph which could prove the contention, or disprove it, without the corroborative evidence of observation, would be one taken from directly, or almost directly, behind the bird, the result of an exposure sufficiently long to record more than one wing beat. This would of necessity show as much blur in the space between the wings as elsewhere, if the wings came together behind the back to produce the beat. In regard to other photographic evidence, Professor A. A. Allen of Cornell University to whom I wrote concerning a statement that he made in 'American Forestry' (to be quoted later), very rightly contends, I think, that the exposure, unless it be a very slow one, records but a single stroke of the wings, and that the wings may thus be shown in any position without definitely proving that because they are not shown to touch that they do not do so. The photograph which accompanies this article, the result of an exposure made just before the "roll," is open to this objection, but if it fails of being in itself conclusive testimony to the assertion that the wings in drumming do not strike together behind the bird's back, it demonstrates the futility of photographic evidence other than such as I have hypothecated above (i. e. the result of an exposure taken from the rear and slow enough to record more than one wing beat).

Here, I think that observation must lend its weight, and I am so far convinced by my own experience that the wings do not strike together to produce the drum beat that I should be astonished if other observers who had watched as many or more performances than I have, and at close range, should succeed in demonstrating by such a photograph as I have suggested that the wings do actually strike together behind the back of the drumming bird. Should it be proved that the wings do meet, it would still be difficult to prove that the sound was produced by their contact, rather than by the forward stroke against the air.

Professor A. A. Allen, writing in 'American Forestry' for August, 1918, describes the drumming as follows: "The drumming sound, which begins with a measured thump-thump-thump — and ends with a loud whirring sound, like the muffled sound of a motorcycle engine — is made by the cock beating the air with his wings. Bracing himself on the log with his tail and standing erect, he first strikes his wings together behind his back producing the thump-thump-thump noise of a big drum."

In reply to my letter asking how he had arrived at this conclusion he says,—"I have never had the opportunity to watch the grouse at sufficiently close range to determine this for myself and am frank to confess that I based the statement upon the photographs and description which appeared in 'Forest and Stream' and in the 'Bulletin of the American Game Protective Association,' where the bird was watched at close range and observations were apparently made for determining this very point. I was also influenced by the similarity of those first few notes to the sounds produced by pigeons and long-eared owls, which are, I believe, without doubt, made by striking the wings together over the back."

The article on which Professor Allen based his statement (Mr. Veeland's in 'Forest and Stream' for April, 1918) and the photograph on which this contention was based I have already discussed. The question of similarity of sound is interesting, but, for want of observation in relation to it, is of doubtful value in determining the facts. We come back to such observation as shall be considered authoritative. Of Mr. Veeland's, putting aside the question of photographic proof already referred to, I can only add, that while he witnessed several performances at close range and secured the best series of photographs of the drumming that I have seen, his observations, as recorded, were made, as were his photographs, from the front of the drumming bird and from the side, positions from which it is well nigh impossible to discern whether the wings strike together or not. Somewhere the truth lies hid, and my purpose in reopening an old discussion is that others may aid in discovering it. When the negative side of the discussion has been settled, however, there still remains the question — if not by this means, how else?

To say, on the positive side, that the sound of the drumming is

essentially the same, and produced in the same way as the roar which accompanies the flight of the Grouse when startled (that is, by the action of the wings on the air), is perhaps an unsatisfactory explanation of that far-away throbbing challenge which steals on the ear so subtly, like the half heard beating of one's own heart. Yet for want of further evidence it must serve. What I should most like to discover is to how great an extent inflation of the rudimentary tympanum serves to enhance the strenuous thrust of the wings which seem to catch the air at the well feathered flanks.

Most of the *Tetraonidae* are possessed of air sacs, located under the neck tufts or ruffs, which when inflated are capable of producing a booming sound of great carrying power, which may be heard while the birds are performing their amatory dances, and it does not seem to me at all impossible that the sound-carrying powers of the drumming of *Bonasa* may in part be traced to an inflation of the rudimentary sacs which it possesses. In this connection observation alone is of little service, though I noticed that in the pause which follows the preliminary wing beats (which have but little sound-carrying power) that the contour of the bird changes perceptibly, the throat and the region of the ruffs is apparently swelled, and the next wing beat comes with increased volume. Mindful of what effects a bird can produce simply by a change in the arrangement of his plumage, I am inclined to think that this "swelling" is of an inflated character. Audubon, by puncturing the air sacs of a captured Pinnated Grouse, satisfied himself that these appendages were the source of the "booming," and perhaps some such experiment with a captive Ruffed Grouse would prove to what extent inflation of these parts plays in the ventriloqual and resonant quality characteristic of this bird's exuberant drumming.

But to me the most significant feature of the drumming is not the question as to the source of its sound-carrying powers, nor the attitudes that the Grouse assumes, though they are interesting, but it is the evidence of the compelling power of habit. (This differs greatly in individuals, and I here confine myself to the individual studied during the spring of 1918.) In spite of the disturbances which occurred owing to my presence in the blind, in spite of the obvious annoyance of the blind itself, especially

when moved to within six feet of the log, in spite of the adversity of the weather, in spite of the countless other logs on which he might have drummed, and on which he had drummed before he fixed his preference on the one which later came under my observation, he continued to arrive at the log within five or ten minutes of the appointed time, hurrying to it, after he had carefully reconnoitred the woods for possible enemies, as if irresistibly drawn by a power over which he had no control. He was obviously reluctant to leave the log when disturbed and usually returned to it, if the hour was still early, as soon as he had satisfied his inherent caution.

I was unable to study to what extent the drumming serves as a mating call, because the hen, whose nest was some two hundred and fifty yards to the north, had finished laying her complement of fourteen eggs on the fifth of May and had begun to set before the third day of my observation. May second and third were the only two days on which I might have seen the birds together at the log, and on neither of these days did the hen appear. On May second, however, after leaving my blind and walking about a hundred yards in the direction in which I had seen the cock disappear, I flushed the cock and another Grouse within a dozen feet of each other. This second bird I feel sure was the hen of the pair, because there were no other Grouse in this particular little second growth swale and because the nest was but a stone's throw away; nor was the hen on the nest when I walked over to it directly after flushing the pair of birds.

Inferences from the bird's attitude while on the log are largely speculation. The watchfulness which he displayed at all times was doubtless quite as much in the interest of his own safety as in the endeavor to discover the presence of his mate, yet there was one characteristic habit that might be interpreted as indicative of the fact that the Grouse was on the lookout for the hen. This was the fact that whenever I made a noise within the blind, such as might have been made by the footfall of the hen on the leaves, he at once craned his neck in the direction of the sound and *immediately drummed*. I made such a noise several times, with the intention of imitating a bird's footsteps, and on each occasion he displayed a lively interest, quickly followed by an exhibition of his wing power.

The sound to which the Grouse gave instant and invariable attention was the alarm note of the Blue Jay. To the scolding of Robins and even to the cawing of Crows he turned a deaf ear, but the protesting voice of a Jay hushed the sound of the drum note, and a period of silent waiting ensued, during which interval he was evidently at some pains to discover the cause of the Jay's displeasure.

There was a time, when the spring drumming of the Grouse thundered from a hundred hills, woke the echoes like the throbbing tom-toms of tribes upon the war-path and sent the blood sap pulsing quicker along the veins; but laws are useless where they are not enforced, and unless the Ruffed Grouse is given a greater measure of protection, the woods will no longer hear his footfall that might for years have thrilled to the vigorous ardor of his wings.

"THE SINGING TREE," OR HOW NEAR TO THE NEST
DO THE MALE BIRDS SING?¹

BY H. MOUSLEY.

My attention was first drawn to this interesting subject by my inability to find the nesting sites of warblers, although regarding other species I was more than ordinarily successful. I must admit I was discouraged but not surprised, for to find the nests of these interesting little gems has always been more or less of a gamble to the students of the family *Mniotiltidae*. Of course there are red letter days when by accident one sees a female with building material fly direct to the nesting site, but these are generally few and far between, and in my experience one hardly ever sees the females until the nests are discovered. It is the males that are always in evidence, not only during the nesting season, but also at migration times, and I can well remember the day when the

¹ Read before the Nuttall Ornithological Club by Dr. Chas. W. Townsend for the Author, Oct. 21, 1918.

idea first occurred to me of paying special attention to them, and ceasing to worry about the females, which as I have already remarked one rarely sees, as compared with the other sex.

With this object in view, I repaired one day to a favorite wood, on the outskirts of which I located a male Myrtle Warbler (*Dendroica coronata*) singing from the top of an ash tree. This bird I determined to keep in view, and follow about wherever he went, a thing much easier to carry out in theory than in practice as a rule, although this particular bird was more than kind, and gave me very little trouble. After watching and following him about for some time, I found that he generally ended by coming back to the ash tree, from which he always sang. Seeing that this was the case I gave up following him about, and remained in the immediate neighborhood of this tree, where soon afterwards I had the satisfaction of seeing him make a sudden dart from the top of it into a nearby spruce, and there I found the female and her nest, and at the same time learnt the secret which has since enabled me to add many a rare warbler to my breeding list. Do not imagine however, kind reader, that in that one morning I had found the perfect system by which all gamblers hope some day or other to 'break the bank.' More often than not the bank breaks the gamblers, and no system seems to hold good for long. With mine, however, the case has been different, for the longer I have studied the ways of the male birds at nesting time, the more I have been able to perfect my system, and instead of the birds beating me, I am gradually getting the better of them, although to do so I have had to display more than the patience of Job, and have often had to remain with them for hours at a time before obtaining their secret. For the perfect working of my system, however, there is one thing essential and that is a singing male, the lack of which lost me a great prize only this summer (1918), for having located a pair of Cape May Warblers (*Dendroica tigrina*) in a certain large wood from June 11 to 26, I failed to find the nesting site, as the male could never be found singing. I would come across him (only once with the female) often in a certain area of the wood, but he always managed to give me the slip after a time, and his failure to sing never enabled me to follow him up. Not so however with a male Bay-breasted Warbler (*Dendroica castanea*) that I came across about the same

time and also in this same wood, for his persistent singing from the top of a particular birch tree eventually enabled me to locate the nest and eggs, as I shall relate hereafter. Neither of these Warblers had been observed here during the breeding season, but I was familiar with them at migration times, when the former has always struck me as being somewhat of a mute species.

However, to return to the Myrtle Warbler (*Dendroica coronata*), after finding its nest I measured the distance of the latter from the ash or 'singing tree,' and found it to be twenty-one yards. I did this at the time (and have continued it ever since) more from habit, than with any preconceived idea in my mind that it was going to be of material benefit to me hereafter, or that it would eventually enable me to answer with some degree of confidence, the question (which I have adopted as the title of this paper) recently sprung upon me in a letter from one of my most valued friends, viz: How near to the nests do the male birds generally sing?

To this question I replied that in my experience if a male bird could be found singing constantly in the same tree or trees, the nest would generally be found within twenty yards of the spot, in support of which I have prepared the following table, from which the average distance of the nest from the 'singing tree' or observation post of the male, for a number of birds works out at rather less than twenty yards, or to be precise seventeen yards.

Year	Species	Distance of nest from 'singing tree' or observation posts of male
1911	Yellow Warbler	8 yards
1912	Maryland Yellow-throat	4
"	" " "	8
"	Kingbird	8
"	Catbird	20
1914	Maryland Yellow-throat	10
"	Spotted Sandpiper	8
1915	" "	14
"	Prairie Horned Lark	32
"	" " "	34
"	" " "	21

Year	Species	Distance of nests from 'singing tree' or observation posts of male
1915	Phoebe	5
"	Robin	8
"	White-throated Sparrow	10
"	Northern Parula Warbler	12
"	" " "	7 and 9
"	Myrtle Warbler	21
"	" "	25
"	" "	6
1916	Black-throated Blue Warbler	100
1917	Nashville Warbler	8
"	Myrtle Warbler	24
"	Blackburnian Warbler	10 and 18
"	Bobolink	25
1918	Northern Parula Warbler	26
"	Magnolia Warbler	18
"	Blackburnian Warbler	18
"	Purple Finch	4
"	Canada Warbler	15
"	Chestnut-sided Warbler	20
"	Black-throated Blue Warbler	50 and 90
"	Black-throated Green Warbler	20
"	Maryland Yellow-throat	7 and 11
"	Kingbird	6
"	White-throated Sparrow	6
"	Wood Pewee	8
"	Cedar Waxwing	4 and 8
"	Bluebird	15
"	Bay-breasted Warbler	16 and 13
"	Magnolia Warbler	7
"	Black-throated Green Warbler	14 and 12
"	Olive-backed Thrush	7
Average =		17 yards

Of course there are many birds that actually sing on the nest itself, such as Purple Finches, Rose-breasted Grosbeaks and some of the Vireos, to say nothing of others which, like the Tree Swallows, do so on and at the entrance to the nesting boxes, as well as Barn Swallows, which sing as they fly in and out of the barn and on the rafters. Many others again, such as Kingbirds for example, make use of the nesting tree to constantly perch in, whilst others will be found singing from it also.

Now in order to illustrate my 'modus operandi,' I propose to give an account of the finding this season (1918) of a Blackburnian Warbler's (*Dendroica fusca*) nest, as well as the one of the Bay-breasted Warbler (*Dendroica castanea*) already referred to. As regards the former, the male had been noted during the migration time as always occupying a certain little belt of spruce and fir trees, on the outskirts of a large wood, and close to a country cross road, and as he was still there after the bulk of the migrants had gone, I came to the conclusion that it was about time to pay special attention to him.

I therefore on June 10 repaired to the site, having already noted one particular tree that he seemed to favor most for his vocal performances. From this tree I measured out twenty yards to the north, south, east and west of it, marking the spots with rough stakes, hoping sooner or later (it is more often than not the latter) to discover the nest within the magic circle. After having done this the next thing I always do is to inspect the ground carefully within the area of the stakes, in order to find out what likely spots (one gets to know these by experience) are dominated by the 'singing tree.' In this particular instance the most likely one seemed to lie to the north, although I rather favored one to the east, from having previously seen the male take that direction on several occasions when leaving the singing tree. However, one can never be sure, and the only way is to watch the male's every movement. This I proceeded to do for the next two hours, with very little result, as he merely kept flitting round about the magic circle whilst ever and anon singing from a few special trees. However, the critical moment came at last, as a downward swoop, so to speak, of his, into a spruce tree to the north brought out the female. I at once made for this tree, mentally congratulating myself that the nest was as

good as found. Careful scanning with the glasses however revealed nothing, nor did a climb produce any better results; so I was perforce obliged to commence the tiring business of watching the actions of the male once more. These however are varied and interesting and the least significant may often lead to unexpected results. For instance, be careful to note in what direction he usually faces when in the 'singing tree,' as this may give some clue to the nesting site. Now in this case it was to the east and notwithstanding his downward swoop to the north, I felt convinced that the nest would eventually be found in the former direction (for the reasons already given), so when after nearly another two hours of weary watching, he at last made another of those telltale swoops, and this time to the east, and the female again appeared, I thought my troubles were surely at an end, and the nest was at last within my reach. Nothing of the kind apparently, for on training the glasses onto the spot (somewhat carelessly it must have been, owing no doubt to being over-tired) no signs of a nest could be seen, and as it was then past noon, I left for home and some dinner, much disgusted with my ill luck. An hour later, however, found me on my way back, with the intention of overhauling that tree more carefully, and perhaps climbing it. The latter however was not necessary, for on approaching it, much to my surprise and pleasure I noticed the female on the ground under it. This of course raised my suspicions, and I watched her carefully until she went at length to the very spot on the branch, some fifteen feet above the ground, that the male had swooped to, and remained there a short time.

Upon her leaving, I had another good look at the spot through my glasses, and sure enough there seemed to be the faintest indication of the outlines of a nest, so faint however that I had failed to notice it in the morning, and even now could hardly make up my mind until the female had been seen to go to it again several times. Thus after some five hours' hard work the goal had been reached, and it lay within the magic circle at eighteen yards from the 'singing tree.'

Now it must not be imagined that during all those hours I had the male constantly under observation, an impossibility with a warbler, as often when singing he would suddenly cease, cock his head on one side, peer down into the undergrowth, and then sud-

denly make off, and I knew by this that he had probably observed the female and was after her; but as often as not I was in the opposite direction, and was unable to follow them quickly enough to obtain their exact whereabouts, and often the male was not seen again for some considerable time. During such intervals I search all the likely looking spots and incidentally often come across the nests of other birds (as will be seen hereafter) the males of which had been noticed in the same places from time to time during my long enforced periods of watching.

The Blackburnian is certainly a great singer, or at least I should say persistent one, for the song cannot by any stretch of the imagination be said to be great. During my long acquaintance with this one he sang off and on for most of the time, and I have noticed the same thing to occur with others that I have watched for shorter periods. The nest contained a full set of four eggs on June 18.

And now for the afternoon of June 24, a record one in many ways, for besides being the first occasion on which I had ever seen a Bay-breasted Warbler (*Dendroica castanea*) here in the summer, I had also the pleasure of finding its nest and eggs, and thus being able to add it to my breeding list, to say nothing of the nests of a Black-throated Green Warbler (*Dendroica virens*), and Magnolia Warbler (*Dendroica magnolia*) that also fell to my lot, as well as one of an Olive-backed Thrush (*Hylocichla ustulata swainsoni*), thus constituting a record for my system for a period of about four hours.

Now to begin with I was on my way to the Cape May Warbler ground, to reach which I had to pass within some two hundred yards or less of the site of the nest of the Blackburnian Warbler already described, when my attention was drawn to a song that puzzled me. It seemed similar to that of a Blackburnian except that it was sometimes given in two keys, and seemed to be generally louder. On looking in the direction from which it came I espied much to my astonishment in the topmost (dead) branches of a birch tree a fine male Bay-breasted Warbler (*Dendroica castanea*). To say that the Cape May was forgotten is putting it somewhat mildly, as I never even gave him a thought again that afternoon, so elated was I at finding a singing male of this rarity, and thus

being able to further test the reliability of my system. Having watched him for some time and convinced myself that the birch tree was really the favored one (although there was a tall hemlock with dead branches also not far off, which was almost equally used), I proceeded to measure off the prescribed distance as already indicated. This being done and the ground, which was truly a warbler one, inspected, I noticed that on the eastern side the trees were taller than the birch or 'singing tree,' and therefore the latter did not dominate this part of the circle, and in all probability the nest would not be there. In passing, it may be well to mention that the 'singing tree' does not always necessarily dominate the nesting one, although I have generally found it to do so, an exception being that of a male Purple Finch (*Carpodacus purpureus purpureus*) who sang from an apple tree on the opposite side of the spruce tree in which the nest was placed, but in this case there were no trees overlooking the nest at all. Surely the male had no voice in selecting that site (although he undoubtedly did the 'singing tree,' as he had frequented it often previous to any nest being started in the spruce), invisible as it was to him whilst singing! But there, that opens up another interesting problem, and I must get back to the work in hand. After watching the male Bay-breast for some time, I noticed that he generally faced either north or south, whilst in the two 'singing trees,' more generally the latter, and I concluded that somewhere in that direction the nest would eventually be found, as it was an absolutely ideal spot. Now in the lower branches of the hemlock tree a male Magnolia Warbler ventured to sing on several occasions, but was always driven away by the Bay-breasted Warbler. This looked suspicious and I overhauled the firs and spruces in close proximity, with the result that the female Magnolia was flushed from her nest and set of four eggs only seven yards away from where the male had attempted to sing.

Time was flying fast, however, and still no signs of the female Bay-breasted Warbler, until a sudden downward swoop of the male to the south, brought her out to the east, and I was able to follow her about for a short time, until she eventually gave me the slip. Then I began to search the southern site more carefully, from which direction I had also just previously heard some Thrush-like

notes proceeding from a tall maple tree; and it was not long before I flushed the female Olive-backed Thrush (already referred to) from her nest and four eggs, which were situated in a small hemlock tree only seven yards from where the male had been heard.

At that supreme moment I was only eight yards from the nest of the Bay-breasted Warbler yet failed to detect it. Then I worked round to the west, where a Black-throated Green Warbler was singing from the top of a tall elm tree, and later on the female was flushed from her set of four eggs, just fourteen yards from the 'singing tree' of the male. At any other time three nests and two of them Warblers in three hours, I should have considered as out of the common, but in the present instance I paid no attention to the matter whatever, my thoughts all being centred on the greater prize.

The best part of another hour however went by and still no results, so I decided to have another good look to the south, as the actions of the male convinced me the nest was in that direction. Incidentally also I wanted to get the particulars relating to the nest of the Olive-backed Thrush, and it was whilst engaged with this that a bird flew to the back of me and alighted in a small fir tree. Turning sharply round I noticed she was the female Bay-breasted Warbler, and almost directly she went to her nest, notwithstanding that I was in full view of her and only eight yards away. The nest was in the top of a small fir tree, nine feet from the ground and three feet from the top of the tree, and placed close against the trunk. It contained a set of four slightly incubated eggs. I had passed it several times that afternoon without noticing it, but no one familiar with the nests of warblers will be surprised at this admission. So beautifully do they seem to blend with their surroundings that they seem to be part and parcel of them, and it is no easy matter sometimes to detect a nest, although comparatively in an exposed position as this one was. It was just five-thirty P. M. when I found it, and within the magic circle too, it being exactly sixteen yards from the 'singing tree' of the male, which I first noticed at one-thirty P. M., so that I had spent exactly four hours with this bird, during which time he sang almost continuously, with only short intervals of rest in between. This species as well as the Blackburnian and Black-throated Blue

(*Dendroica caerulescens caerulescens*) in my experience are certainly incessant singers, but the Black-throated Blue differs in many respects from the other two, as he seems to affect denser foliaged trees, and usually sings higher up and is what one might call not a home bird, as I have generally found him to sing much further away from the nest than any of the other Warblers. Still in his case if you are familiar with the sites usually selected for nesting, the 'singing tree' or trees will always give you a clue; the only thing you must do is to be somewhat more elastic with regard to the magic circle. In the case of a nest I found this year I could see from the nature of the ground beneath the 'singing trees' that a radius of twenty yards failed to bring me within any site at all likely to hold a nest, the ground being much too open; but by doubling this distance I came within some very dense undergrowth, and this I knew from experience was just the very sort of ground a female Black-throated Blue Warbler would be likely to select. I therefore measured out forty yards, but even this was not quite enough, for the nest was eventually found at fifty yards from the nearest 'singing tree,' and ninety yards from the furthest. I mention this case in order to show that there are times when experience and a little common sense must be displayed if good results are to be expected.

In conclusion it may be stated that in the case of birds that sing in the air such as Prairie Horned Larks, I have found their nests by constantly noticing the male frequenting a certain observation post, usually consisting of a large stone or boulder, although in one case it was actually a tree (see 'Auk,' vol. XXXIII, 1916, p. 285), and from there measuring out the required distance and then walking quietly over the ground, looking well ahead for the female to slip off the nest. Of course it may be necessary to repeat this proceeding several times before she is eventually found at home, but in the meantime there is always the off chance of the nest being discovered quite irrespective of the female whilst quartering the ground. This method can be adopted equally well with Spotted Sandpipers (*Actitis macularia*) as I found two nests, one in 1914 and the other in 1915, the observation post of the male in each case being a heap of stones in a field adjoining 'the marsh.'

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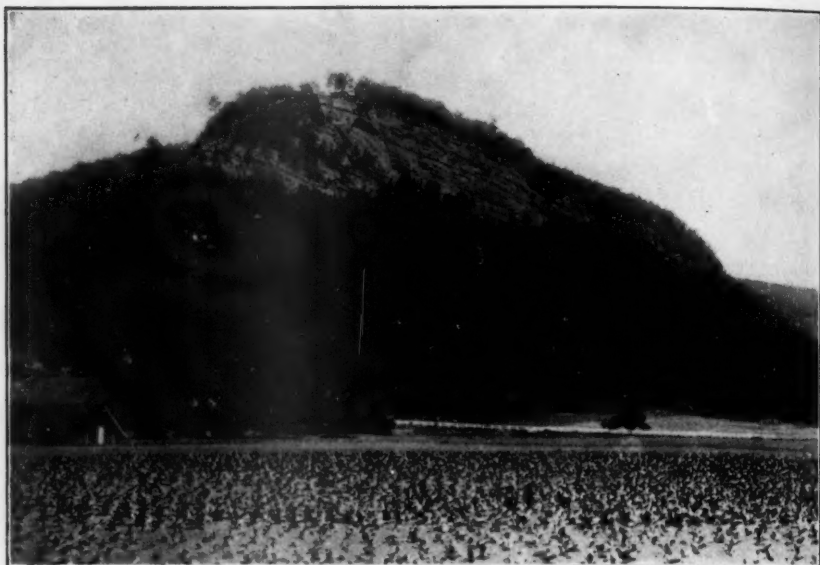


Photo. by V. F. Richards

1. SUGAR LOAF MOUNTAIN, DEERFIELD, MASS. SHOWING LEDGE WHERE
DUCK HAWKS NESTED
2. YOUNG DUCK HAWK ON NESTING LEDGE, MAY 30, 1917

THE EARLY HISTORY OF A DUCK HAWK.

BY VIOLA F. RICHARDS.

Plates XII-XIII.

How long since Sugar Loaf Mountain, a State Reservation in the town of Deerfield, Massachusetts, became a nesting place for the *Falco peregrinus anatum*, or Duck Hawk, no one knows, but records show that it was more than one hundred years ago. Year after year they have laid their eggs, and reared their young in practically inaccessible places among the ledges on the eastern side of the mountain.

In the spring of 1917, Charles L. Fisher, an enthusiastic bird student who lives at the foot of Sugar Loaf, discovered that the Duck Hawks had chosen for a nesting place, a ledge to which access was surprisingly easy. On the open ledge, with no pretense of a nest, were laid three eggs, cream colored, with an encircling band of chocolate colored spots. Lighter spots covered the large end of each egg, but the small end was clear. These eggs were the size of, and similar in shape to, a Leghorn pullet's egg. At the time of discovery two of these eggs were cracked, ready to hatch. That night two of them disappeared. The remaining egg hatched next day, which was May 5, 1917.

Instead of being bare and unlovely, like many baby birds, this little bird resembled a bunch of cotton, with two bright, black eyes. Within a few days, a faint, grayish hue took the place of the clear white. May 18 the nestling was photographed for the first time. An excellent idea of the nesting place is gathered from this picture.

A second photograph, taken May 21, shows the bird at close range. At this time it did not show much fear of intruders.

May 30, when a photographer visited the ledge, the young bird was still clad in a coat of fluffy down. During this visit the anxious parent birds soared overhead, occasionally coming so near that the whistle made by their wings cutting the air made a chill creep along the spine of the photographer. That their shrill screams were warnings which the young bird understood, was evident, for it crouched as flat as it could on the rock, with head down, and kept as nearly motionless as possible. But its heart beat wildly,

and its beady black eyes watched every move made by the visitor.

Early in June, dark feathers began to take the place of the down, and for a time the bird was decidedly ragged in appearance. His naturally fierce disposition became noticeable, and he showed increasing resentment when visitors appeared.

About this time State Ornithologist E. H. Forbush came to take pictures of the now famous baby Duck Hawk. Earlier in its career, Mr. H. K. Job had succeeded in obtaining some very fine films of it for moving pictures. At that time it had been quite docile, and would stay where it was placed very satisfactorily. Now, however, it was more active, so Mr. Forbush, aided by Mr. Fisher, attached an inconspicuous little harness to its leg, and hobbled thus, it became an unwilling but quiet subject for the photographer. So ferocious had the bird become, it was necessary to handle it — literally — with gloves on.

Wishing to get a picture of the rapidly maturing bird as late as possible before it left the nest, Mr. Fisher closely watched its development. When he judged that the bird was ready for flight, he made a last exposure with the wonderfully fine result shown here. Within a half minute after this was taken the bird flew from the ledge. Just how long it remained in the vicinity is not known; but a few days later it alighted on a branch of a tree over the ledge upon which Mr. Fisher stood, and fearlessly watched while an experimental attempt to frighten it away, was made.

If anyone ever takes a Duck Hawk which carries upon one leg the leg-band of a hen, he may be reasonably sure it is the bird about which this article is written.

A careful record was kept of the remains of such birds as were used for food by these Duck Hawks, and a list is given below.

Blue Jays (many)	Mourning Doves
Kingbirds	Phœbes
Nuthatches	Different Warblers
Chickens	Veeries
Grosbeaks	Woodpeckers
Scarlet Tanagers	Homing Pigeon
Flickers	

May 30, on the leg-band of a Homing Pigeon, the remains of which were found on the ledge, was this inscription: A-U² J 5733 (the A and U joined together).



Photo. by Chas. L. Fisher

1. YOUNG DUCK HAWK, MAY 21, 1917
2. YOUNG DUCK HAWK, JUNE 16, 1917

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A COLONY OF CAPE COD PIPING PLOVER.

BY C. A. ROBBINS.

THE Piping Plover (*Egialitis meloda*) is the only beach-inhabiting member of the family that breeds within the limits of New England. To former generations of residents along the coast their rather plaintive call was a familiar summer sound. Then, because the gunner had marked them for his own, there came a time when long stretches of their breeding grounds grew silent and as the silence spread over an ever-lengthening area it began to be feared that they might — like other species of shore birds — entirely disappear.

Happily the fear is not likely to be realized. On the contrary, it is gratifying to note, in some places, a generous increase in their numbers.

This is due mainly to the protection which the law is now affording them, although the steadily growing interest in the welfare of all birds has doubtless aided, both directly and indirectly. It may pretty confidently be expected therefore that they will reappear in other localities which have long been bare of them and that in those most favorable there will be a return to something like their former abundance.

The shores of Cape Cod are mostly gentle slopes of clean beach with a belt of stony or pebbly sand extending back above the rows of drift, which mark the upper reaches of the tide, to a growth of beach-pea and sand-grass (*Ammophila*). This, in turn, often meets and over-runs a rise of low dunes beyond.

Spots of this kind are chosen by these birds for their summer homes. One such on the Bay side of the Cape and near its base, varying from the conventional character only in having on the inland side of the narrow wall of dunes a shoal brackish pond of an acre or more, has lately become really populous with them. On a section of beach bounded on one side by an inlet and on the other by a break in the chain of dunes and containing possibly four acres there were this past season (1918) not less than nine

pairs and broods while on an adjacent strip of beach of about the same extent nearly, if not quite, as many more were settled.

There are probably many who are unfamiliar with the species. To them, perhaps, the following,—resulting from frequent visits to the little colony,—may be of interest.

The earliest brood was running about on the morning of June 9. The birds were very small, having hatched probably earlier in the day or possibly on the day previous. The last hatching was around the 16th. All, or at least all within the bounded section, were in broods of three. By the middle of July old and young were flying in flocks. By the last of the month the majority had left; those that remained being either in small bands by themselves or else associated with the newly-arrived Ring-necks.¹

Most birds, even those that are gregarious through the greater part of the year, disperse more or less widely during the nesting period. These Plovers, however, nest comparatively close together. The young, therefore, of every brood from the time they are hatched are not only continuously associated with one another but as they range over the beach in search of food each is constantly brought into contact with members of other broods while the broods themselves gather into flocks as soon as the power of flight is acquired.

While this habitual association indicates, of course, a naturally strong social disposition and consequently a more than ordinary amount of sympathetic feeling, the continued companionship itself could hardly fail to develop the feeling still further. Hence there has been built up in the species a spirit of mutual protection.

This communal foster feeling occasionally manifests itself in a marked degree; as when, at a threat of danger, more than two adults join in driving a single brood up the beach and into the safety which the concealing color of the dry sand furnishes.

It is shown again by the number of old birds that attempt to distract attention from the same brood or even from a detached individual by feigning; creeping off with wings outstretched and fluttering, tail fanned and dragging or, if the need requires more

¹ There is, of course, no way of knowing that these later birds were from the summer colony. Possibly all those had moved along and the ones seen from time to time during the rest of the season were migrants.

extreme measures, collapsing utterly a short distance away as if completely exhausted.

They always make their nests on the dry upper beaches but, like various other shore birds, feed commonly along the water's edge where the moist sand teems with myriads of minute living creatures. Here, as they run back and forth, the comparatively dark background makes them conspicuous even from some little distance and, as if sensing this, the first hint of approaching danger sends them to the cover of the lighter colored beach above.

Concealment is the best means of protection the little birds possess. It is also largely depended upon by the adults during the nesting season and until the young are able to use their wings. A really remarkable correspondence has been developed between their color and that of the upper beaches; so perfect is it that it enables them to merge themselves into and become a practically indistinguishable part of the surrounding waste of sand. Hence birds to be kept under observation must be watched while they are in motion until they come to rest. If the eyes are diverted from one after it has settled much patience is apt to be required to locate it again although its whereabouts may be almost exactly known.

Their disappearance is due to the beach appearing to be uniformly of one color while actually it is not. The irregularities in its surface produce everywhere a multitude of shadow-points and lines and besides these shaded spots countless particles of dark colored material are mingled with the lighter sand. These contrasting colors are lost in the impression of sameness which the beach as a whole presents and thus, while the general tone of the upper parts of the bird matches that of the dry sand on which it crouches, the darker markings in its plumage fade into the background and become no more noticeable than the lines of shade they simulate. The eyes, which in the hiding bird of all ages are kept alertly open, are rendered inconspicuous not, perhaps, so much because they simulate shadow-points as because of their likeness to dark bits of beach content.

It is difficult to see whether or not the presence of stones or pebbles is an advantage to the bird. In all probability it is; yet the disappearance, at least so far as human vision is concerned,

seems to be as complete against a background of bare sand as against one over which stones are thickly strewn.

Of course it frequently happens that there is no time for concealment. Then, the young birds attempt to escape by running,—the tiny legs working with surprising rapidity and carrying them over the ground so swiftly and smoothly that they looked like balls of down blowing before the wind. Also, if their escape up the beach is cut off and they continue to be closely pressed they do not hesitate to take to the water. Even those only a few hours out of the shell swim well and navigate their frail craft if not with intelligence at least in a direction away from the source of danger. Obviously neither of these two modes of escape can afford them much security.

The earliest concealing actions must be wholly instinctive, but from them (which lead to a merely passive reliance upon concealment) there is a gradual transition to actions which are intelligently directed to make the concealment more effective. For instance, the very young when frightened run to a safe distance and simply sit motionless. Birds a week or more older not only run but usually *hide*; that is, they flatten themselves, head as well as body, on the sand, often (perhaps in the majority of instances) turning so as to face the danger point. Furthermore, the older fledglings will repeat the performance as often as occasion requires; a too near approach starts them running again and again and the concealing actions will be gone through any number of times. With those younger or less experienced there is as likely as not to be no further effort made to escape after the first; and this, as we have just seen, ends with no attempt toward concealment other than the negative one of sitting still.

One of these newly hatched youngsters that we came upon suffered his bill to be uptilted, his body to be prodded with the finger and even permitted himself without protesting to be picked up and held in the hand. All to no purpose; the machinery of his nervous system seemed to have run down and when he was returned to the ground he almost immediately settled into position again. Evidently concealment, throughout the history of the species, must have been generally successful; otherwise, it is hard to understand why the relation between the concealing actions and

the ensuing feeling of security should have become so firmly fixed.

As a mode of escape or protection, however, it is practised only so long as the birds are bound to a restricted area — the young by their inability to leave it, the old by the care which the nest and fledglings entail. As soon, therefore, as the young birds have acquired the full use of their wings both young and old alike seek the greater safety in flight.

BLACK DUCK NESTING IN BOSTON PUBLIC GARDEN.

BY HORACE W. WRIGHT.

THE first appearance of Black Ducks (*Anas rubripes tristis*) in the Public Garden, of which I am aware, was in the early morning of May 22, 1910, when a pair flew in, alighted on the pond among a family of Mallards (*Anas platyrhynchos*), and remained fifteen or twenty minutes, alert and watchful in their new surroundings. The parent Mallards at once became solicitous for their young brood, especially the mother who carefully kept herself between the female Black Duck and the ducklings. These ducklings had been hatched on May 12, nine in number, but four had been lost in the first few days of life on the pond, leaving five which were successfully reared. When the pair of Blacks left they were escorted on their way by the Mallard drake. The Black Ducks very probably came from the Back Bay Fens, where a considerable flock then wintered season by season. The building of the coffer dam to form the Charles River Basin and exclude tide water has resulted in the complete freezing up of the waters in the Fens in more recent years and an enforced absence of ducks in the winter. But about the intakes of reservoirs in the vicinity and on Leverett Pond, where the waters of Muddy River enter, Black Ducks in varying numbers still winter.

The following spring, 1911, a pair of Blacks came to the Garden on April 18, remained for a short time, watchful of any approach,

and presently took wing westward over the housetops in the direction of the Fens. The following morning they were again present, but did not stay, departing in flight toward the Common. The third morning during an easterly rain they remained and were observed for forty minutes, a typical pair of *Anas rubripes tristis* (Brewster,) the drake with rather red legs and greenish bill, and the duck smaller with brownish legs and dusky bill. They occupied the northern half of the pond where the island is located. The duck invariably swam in advance of the drake, who gallantly accepted her motives and desires as his guide. Once she flew up onto the side of the foot bridge outside the railing in her procedure of investigation. Then both swam toward the island, and she traversed much of its surface, testing the various recesses among the rocks, evidently in search of a nesting site, and several times settled herself an instant to try the several locations. Again she dropped into the water, joining her mate who had remained close by, but had not gone on the island with her. The resumption of close companionship was then followed by much bobbing of heads and a full expression of mutual love. Swimming was resumed, and later they climbed out onto the curbing, giving scarcely more heed to passersby than did the domesticated Mallard pair of the previous year. Perhaps, the heavily clouded and rainy character of the morning was a favoring circumstance. Clearly they had gained a great degree of confidence in two days and the preliminaries for nesting seemed now to have been inaugurated. Would the boating presently disturb them? It was a question of much interest. The island, however, will be as secure a nesting place as it was for the Mallards the previous year when the nine ducklings were hatched, and later in the summer a second brood of eight was hatched and all were raised.

That pair of Mallards was the first which had been seen in the Garden. Probably it belonged to the park flock living in the Fens and in 1910 first made choice of the Garden pond for breeding. These Mallards, presumably the same pair, had returned on March 21 in the following spring and begun preparations for nesting on the island, when a week later the water was drawn from the pond and remained off for eighteen days, leaving only a dry bottom, and the discouraged ducks left. The water was restored on April

15, and happily, three days later the pair of Blacks appeared to take the place of the Mallards and possess the now undisputed waters, since the latter had evidently gone elsewhere for nesting. No Mallards have since bred in the Garden. The order of arrival in this instance seems to indicate that the Mallards were prepared to breed much earlier than the Blacks, even four weeks, the difference in time between March 21 and April 18. Circumstances unknown, however, may have contributed to this disparity, such as the disturbance of the Blacks where their nesting may already have begun. But the interesting fact remains that they found the Garden pond with its island unpossessed and at once adopted it for their family life.

After the three successive days of the presence of the Blacks, already noted, they were absent from the records of the following two mornings. But on April 23 they were back, and the duck several times again searched the island for a nesting site, the drake remaining nearby on the water and occasionally bobbing his head in affectionate greeting to her. When she rejoined him, there was the natural expression of their mutual love. Again the next two mornings the pair was absent, and the question arose whether their choice of the Garden for nesting was after all a certainty. But on the 26th, this doubt was removed by perceiving that the duck had apparently made choice of location for her nest on the west side of the island in a suitable little hollow into which her body fitted well. She turned herself about in it several times. The spot seemed rather exposed to view, having in reality no concealment; but the rocks and earth composing it blended completely in coloration with herself. So the thought was, if she will only sit immovable when boats round the island close to its shores, she will probably successfully cover the period of incubation. The next day the duck was on her nest in the early morning, and the drake was temporarily absent, obviously cognizant of the stage the family life had reached. But the day following it became apparent that mother duck was not satisfied with the chosen spot, that it had not borne the test of trial, and she had now selected a place on the southerly side of the island two to three feet above the edge of the water, snugly located behind the trunk of one of the willows and shielded still more by neighboring rocks, yet

within view of the careful scrutiny of an observer from shore. The drake was again present, but took flight away about 7 A. M. in the direction of the Charles River Basin, the duck continuing on her new nest while we remained a half hour longer. This was April 30. The days following, she went on her nest each morning, usually after being seen on the water with her mate, and when she had settled herself, the drake would swim away and remain at a distance, thus withdrawing attention from the nesting site, or would fly away to other waters for a time. On some of the earlier mornings the pair were seen arriving on the wing and soon thereafter the duck to go on her nest. So its occupancy continued up to May 24 inclusive, when it might be supposed that she had laid her litter of eight to ten eggs and been sitting about two weeks. But the following day she could not be seen on her nest or on the pond and was not again present during the remaining days of May. For some reason the nesting had failed.

The next two springs, 1912 and 1913, no Black Ducks were seen to visit the Garden pond. In 1914, as late as May 16, a pair appeared and was present on some of the successive days, but there was no nesting. The visits were apparently occasional excursions from other waters. But in 1915 a pair of the *tristis* type, perhaps the pair which had made a few occasional appearances in 1914, again came to the Garden as early as March 14, when the winter's ice had but partly gone from the pond. They were not seen again, however, for a week, during which there was a new formation of thin ice nightly with minimum temperatures of 26° to 29°. They reappeared on March 21 and followed up their visits, sometimes being seen on the Frog Pond of the Common. But conditions were not yet favorable for nesting activity, for on March 27 there came a cold wave lowering the temperature to 18° and a coating of new ice was formed on the ponds. This was directly followed by the drawing off of the water for the purpose of cleaning the bottoms, and the ducks, so far as my observation went, made only two or three casual visits during the next two weeks. On April 3 six inches of snow fell. This delayed the spring-cleaning work, and it was two weeks later, or April 17, when the water was turned on again. Visits of the pair of Blacks, however, on April 11, 13, and 14, indicated that they were keeping a watchful eye on

conditions and might be cherishing a purpose of adopting the Garden for their season's family life. So when the pond had been filled by opening connection with the city's water supply, it was reassuring of the fixedness of their choice to see the pair present and investigating the island, the drake with the duck. Two days later, an observer had the unusual sight of witnessing the female walk along a somewhat horizontal branch of one of the willows on the island, as a tree-nesting duck would do. The following day, the 20th, she was seen settled upon what we supposed to be the chosen site of her nest, and egg laying probably began. The location was near the top of the island, which, however, is small, being, perhaps, not more than forty feet in diameter. The sitting was successfully accomplished, notwithstanding much boating on the pond, and on May 29 mother duck led ten ducklings down to the water. This would indicate that the period of laying extended from April 20 to 30 and the sitting period of four weeks to May 28. I had left the city for the season on that day and so was informed by interested observers of what subsequently took place. It seems that two of the ducklings were soon lost, and that when the remaining eight were only four days old they were taken from the mother by the city park department and carried to the zoölogical collection at Franklin Park. The park management, it may be said, got an impression from the actions of the mother duck in leading her young much about over the lawns and getting them into fountain basins from which they could not clamber out and follow her, that she was lacking in the proper care of them. The parent birds at once left the Garden for the season. But they were seen on two or three occasions in October, showing that they retained a liking for the place. It was, however, a very abrupt and disappointing ending to a mother's patient sitting and a most successful hatching, with much credit due the boating public that the nest had in no way been interfered with during the period of almost six weeks covering the laying and incubation of the eggs. The mother's restlessness with her young may have been due to a desire to get her ducklings away to a less frequented place. But the Mallard of 1910 had brought up on the Garden pond her two broods hatched on the island, and these had had no difficulty in swimming out of the way of approaching boats and

had grown into mature birds within the Garden. And the whole combined families were present on the pond many days in the autumn up to its freezing over for the winter in late November, on other days dividing up and some of them on other near waters.

When the season of 1916 opened, the first day that the pond was free from ice, namely, April 2, the pair of Black Ducks made their reappearance, having been thus watchful of conditions. It could not be doubted for a moment that it was the same pair which had adopted the Garden pond the preceding year, so wonted to the place did they seem and withal so glad to be back again at the earliest opportunity. They were of the same *tristis* type. The records show that they were present continuously from that date. On April 6 courting was observed, the duck looked the island over, and, before leaving it, once again as in the previous year perched upon one of the slanting willow trunks and flew off thence to the water. Three days later, the 9th, she was on her nest and probably deposited her first egg, as two days afterward, when she was absent from the Garden, the nest was visited and found to contain three eggs. The water had been drawn from the pond and none remained around the island. But even these conditions did not deter her from holding to her chosen location. This was now on the northerly side of the island about four feet from the water's edge. On the 14th, again in her absence, the nest was visited and found to contain six eggs well covered over with dead grasses, the number indicating that one had been laid each day. On the 19th the water was returned to the pond. Thirty-one days later, on May 20 at 7.10 A. M., she came down to the water followed by five ducklings only. Thus many of her eggs had failed to hatch. The period covered between the laying of her first egg on April 9 and the hatching on May 19 was forty-one days. As sitting would occupy but twenty-eight days, the period allowed for the laying of thirteen or fourteen eggs. Whether such was the case it cannot be stated. If she did not lay as many, there must have been an interruption to the usual order of the nesting due to some cause unknown.

When the ducklings dropped into the water, they at once swam actively about in their newly awakened happiness. A half-hour later the mother had taken them back to their nest for brooding.

The drake came in on the wing five minutes after the young had embarked on the pond and joined his family for a time. He had been absent almost altogether during the period of incubation, only occasionally being seen on the Garden pond. But on some of the days he was no farther away than the Frog pond on the Common and had the companionship variously of one, two, or three other drakes. During the days following the presence of the ducklings on the pond with their mother he was seldom with his family.

On May 23, when the ducklings had been but three days upon the water, the family was missed from the pond. But shortly a loud quacking was heard from the northwest corner of the grounds, and it was found that the mother with one duckling was travelling toward the pond, while the four remaining ducklings were struggling to get out of a fountain basin and follow her. This they could not do on account of the height of the granite curbing. A dozen men had gathered, attracted by the mother's calls, and seeing that the attempts of the ducklings were unavailing, it was at length suggested that a garden bench be placed on an incline with one end in the water and effort be made to induce them to clamber up this incline. This was done, and after a time the idea of a means of escape thereby came to them and they began its ascent. But the bench proved to be slippery, as it was wet with rain, and the ducklings slid back as often as they made an advance. The thought then occurred to place newspapers which were at hand on the wet surface of the bench. This done, after a little time of further effort the ducklings were again induced to try the ascent, and three succeeded in climbing to the top and tumbling to the ground. Meanwhile the mother duck had left her one duckling safe on the pond and returned quacking for the four, a reversal of the story of "the ninety and nine." With a little more perseverance the one remaining duckling was induced to climb the newspaper-covered bench and was at last in safety with its mother and the three, and all travelled to the pond and joined the duckling left there, which meanwhile had remained unconcerned over its isolation as if it comprehended the whole proceeding. The interest and patiently rendered assistance of the men, who were passing through the Garden at the time to their work, was a pleasing instance of spontaneous kindness and sympathy.

Three days later there were but four ducklings, one having been lost. And the following day the whole family had disappeared. The explanation furnished me by an employee was that he was told by a man, who himself observed the proceeding, that he had seen at five o'clock in the morning the mother duck and young travelling over the Garden lawns and crossing Beacon Street in the direction of the Charles River Basin, which is just in the rear of the houses. Such a walk by the brood would certainly not be beyond their powers, taking their way through the extension of Arlington Street to the esplanade bordering the basin. The act of the mother was entirely consistent with her apparent purpose the previous year, when she was intercepted and her ducklings taken away to the city Zoo. Doubtless this brood of four, then but a week old, perished on the open waters of the Basin, unable to cope with their roughness when strong winds arise. Thus we have an instance of a Black Duck, to a considerable extent domesticated by living among men so that she nests confidently where they resort in large numbers, upon possessing her young apparently urged by a desire to get them away to a less frequented place under a mistaken idea about their relative safety, and so jeopardizing their lives. Four days later, May 30, the pair was again on the Garden pond without their ducklings, but, as far as my knowledge goes, they only continued to visit the pond for a day or two and then absented themselves. In October and November a pair of Black Ducks, presumably this same pair, was observed on the Garden pond upon many of the days and were last seen visiting their old haunt on November 24.

When the spring of 1917 was opening and the ice began to break on the ponds, so that merely a small area of open water had appeared at one end of the Frog Pond, the pair of Black Ducks — with scarcely a doubt the same pair which had nested on the island in 1915 and 1916 — so closely watchful of conditions as to discern this, once more appeared on the wing over the Garden and, perceiving an unbroken surface of ice on the pond there, continued their flight to the Common, where was the bit of open water. This occurred on March 26. On the following day the Garden pond came to be almost half free from ice, and, upon my morning visit, the pair was found to be swimming and tipping

happily in its waters, availing of the very first opportunity to be in their old haunt again, it may be said indeed, delaying scarcely an hour after the partial opening up. Their presence on several days thereafter was recorded. On April 1 the duck was observed on the island. On the 4th the water was drawn off, and the next day the pair was seen flying in, but they left directly, as the pond had been drained to its bottom. For seven days then the ducks were not seen, and it seemed as if they might have been deterred from their purpose of again breeding in the Garden. But on the 13th they were back and paddling in the mere shallow ditch which runs centrally through the pond and still retained a little water. It was five days later when the water was restored and the pair began their continuous occupancy of the pond. This season it seemed as if there were a purposed delay on their part in beginning the nesting until the water should have been returned, as by their experience of previous seasons they might feel assurance it would be. On the first day of their return, April 18, the female was seen investigating the island. The following day she went upon it several times successively during observation and seemed to be making choice of a spot on the southerly side, for she again and again tested its fitness by adjusting herself upon it. Six days later she was seen on her nest, probably to deposit her first egg, and upon each day following the same record 'duck on her nest' was made up to May 29 inclusive, when at 7.20 A.M. she moved down to the water with a brood of eight ducklings following her. The drake was not present at the time. The egg-laying would seem, therefore, to have occupied eight days, April 25 to May 2, and the period of incubation to have extended to May 28, when the young were hatching, and thus upon the water the day following. Again mother duck had accomplished a successful nesting, free from interference. It had been possible just to discern her form as she sat on her nest, the protective coloration of her plumage blending completely with her surroundings. And later, when the grasses and lily leaves grew up around her, she was almost entirely concealed from view. So as she probably maintained her fixed position when boats full of people rounded the island, it is likely that their occupants were unaware of her presence. But many bird-lovers followed the course of her family

life with much interest and pleasure. I was informed that the brood was safely cared for in the Garden up to July 4, or a day or two later, when the ducklings had come to be more than five weeks old; not one had been lost. But the whole family then disappeared, and it was surmised that the mother following her bent, as observed in the two preceding years, had led them over to the Charles River Basin.

In October I found the mother and one immature duck on the Garden pond. The young duck was about half grown, and the wing quills were very little developed. It was regarded as probably a duckling of a second brood, raised outside the Garden; for I have since been informed that a mother Black Duck with two ducklings, probably three or four weeks old, was seen for a time in late summer on the esplanade bordering the Charles, where it is at a distance of a few hundred feet only from the Garden. So the other having been lost, presumably on the Basin, she may have eventually led her remaining duckling to the Garden pond now so familiar to her. Here it remained continuously up to the time of the closing of the pond with ice, having grown to about full size and developed power of flight. Sometimes in the later days of the autumn the mother was absent and the young duck alone, and again on many days not only was the mother present, but several others, both male and female, which came in company with the original pair to its Garden haunt on excursions from other waters. And it is not unlikely that some of these visitors were members of the brood raised in early summer which departed from the Garden and, it was surmised, went to the Charles River Basin at the time of their disappearance.

So the Public Garden has been the successful nesting place of a pair of Black Ducks for the last three years, 1915, 1916, 1917, following an earlier attempt at nesting in 1911 which was not successful. These breeding ducks are to be regarded as essentially wild, not having been in the care of the city or owned by the park department, but belonging to flocks which year by year have arrived upon ponds and reservoirs in this vicinity and have wintered here in considerable numbers. They come and go at pleasure. So these pairs of the Garden, undoubtedly of such origin, have lived their own free life and come and gone according to their

desire, owned and controlled by no human agency. Protective laws now in operation for several years have materially furthered the possibilities and even probabilities of just such an occurrence as the choice for breeding of a much frequented city garden like the Boston Public Garden, possessing a pond and suitable island within it. And as wild ducks just from a fully wild life soon come to feel at ease and safe, gradually losing apprehensive fear, when unmolested in their occupancy of park and reservation waters during their migratory flights, which the extended visits of wild ducks¹ to Jamaica and Leverett ponds in recent years have shown, so these Black Ducks of the Public Garden, which already had lived in some degree of confiding association with man on neighboring waters, soon became as wonted to the peopled garden and as little apprehensive upon near approach as domesticated ducks of farm or public park. Yet they retain their freedom, as the latter do not, and live their own lives unmodified by the control of man. This is cause for congratulation and gratitude to the agencies which have so efficiently and earnestly labored for laws covering the protection of our wild fowl.

It may be stated that the Boston Public Garden has an area of twenty-four acres and is located somewhat centrally within the city, the Charles River Basin, however, lying in close proximity to its northern side. The pond occupies three and three-fourths acres of the whole area. It is shallow, not paved except around the margin, but has a muddy bottom, and it is bordered by granite curbing. In former years European Swans and for one or two seasons Muscovy Ducks were kept by the park department on the grounds during the season when the pond was open, but in these recent years of the nesting of the Black Ducks no other water fowl have lived within the Garden. The Blacks, therefore, have had undisputed possession, while the swans and domesticated ducks have been maintained at Franklin Park in connection with the city's zoölogical collection there.

In the spring of 1918, this pair of Black Ducks made its reappearance on March 25, when the pond was still incased in ice, making a circuit over the Garden, but not alighting. Two days later

¹ Some Rare Wild Ducks wintering at Boston, *Auk*, XXVII, Oct. 1910, pp. 390-408.

they made a brief visit, remaining a few minutes at the base of the fountain where already was a very small area of open water. On the 30th the pair was seen standing on the curbing upon the first day of a considerable opening up. On the following day the ice had almost entirely disappeared, and the Blacks were present, enjoying the open water. On April 1, at the time of my morning visit, the female, to my surprise, was seen on the spot of her nest of the previous year on the island, well settled upon it and occasionally drawing dead grasses and leaves with her bill about her. The drake was swimming on the pond. The day following I found the water was being drawn off for the annual spring cleaning, but the ducks were present. April 3 and 4, the pond had been drained, and the ducks were not present. But on April 5, again the duck was seen on her nest at the time of my morning visit, while laborers with hoes were scraping the bare bottom of the pond around the island. And a little later the pair was seen swimming in the central ditch, where some water remained. On the 6th, as the duck was not present, I visited the nest and found it empty; but upon the bottom of the pond at a spot nearby was the shell of a duck's egg, indicating that she had laid her first egg, presumably, on the previous day when I had seen her on her nest. Then during the days following the pair absented themselves while the work of cleaning was completed. The water was restored on the 11th, and in another day the pond had filled. But the ducks did not promptly return. On the 16th, however, again the duck was seen on her nest in the morning, and it seemed likely that her nesting was now begun in earnest, but it did not prove so. The visits of the pair were intermittent and transitory both to the Garden pond and the Frog Pond, and in late May they were no longer seen. At this time the pair of Blacks was replaced by a pair consisting of a Mallard Drake and a Black Duck, which were seen successive days, with a presumption that this pair in the absence of the Blacks had become their successors. Both pairs had been observed present on one or two occasions, when the Black Drake drove off the Mallard Drake, pursuing him from the Garden. But it eventuated that the Blacks seemed not to have a settled purpose to breed in the Garden this season, and so finally at the end of May they relinquished the pond and island to this rival pair whose

nesting now began, as indicated by the presence of the drake alone on the pond morning by morning and the absence from view of the duck, as she presumably occupied her nest on the island, concealed by the vegetation which had arisen upon its surface.

THREE INTERESTING GREAT HORNED OWLS FROM NEW ENGLAND.¹

BY GLOVER M. ALLEN.

DURING the cold winter of 1917-18, New England had an unusual visitation of Great Horned Owls. A large number were killed or captured and many found their way into taxidermists' shops. Among several received that winter at the State Museum at Augusta, Maine, I noticed on a recent visit, a single one that appeared to be uncommonly dark, and on my expressing an interest in the bird, Curator Thomas A. James of the Museum very generously presented the specimen to the Boston Society of Natural History. It was an adult female taken at Scarborough, Maine, about February 7, 1918, and received in the flesh by Mr. James on the 9th. Through the kindness of Mr. Outram Bangs, it has been compared carefully with the series of Great Horned Owls from eastern North America in the Museum of Comparative Zoölogy, and it seems to be without doubt referable to the dark northern race, typical in Labrador, *Bubo virginianus heterocnemis* Oberholser. It is especially interesting, however, in being even darker than the generality of these northern birds, with a considerable clouding of blackish in addition to the black barrings that thickly cover the breast, and in almost lacking the usual bright buffy markings. Its whole appearance is therefore unusually sooty. It agrees with the Newfoundland and Labrador birds in having the facial disks dark, a mixture of black, gray and tawny, instead of nearly clear tawny, as in typical *virginianus*. The feet are dusky gray, finely speckled with darker, instead of the usual

¹ Read before the Nuttall Ornithological Club, January, 1919.

ochraceous color, though in this respect it is nearly matched by a bird from Newfoundland.

In 1897, Mr. Arthur H. Norton (Proc. Portland Soc. Nat. Hist., Vol. 2, p. 103) recorded as a bird new to the Maine list, a very dark-faced Horned Owl in the collection of the Portland Society of Natural History, that was killed many years previously and given the Society in March, 1870. It was taken near Portland, Maine. Mr. Norton referred it to the race *saturatus* as then understood (now restricted to the dark form of British Columbia), and described it as "very dark brown, or blackish brown" above with fine grayish marks; "very wide dusky bars below, having a tendency to mass on the breast; feet and bases of the feathers below deep tawny (much deeper than in any specimen of *virginianus* examined)"; wing 400 mm.; tarsus with numerous dusky bars. No doubt this, too, is an example of the subspecies *heterocnemis* and came from the north.

Later, Knight (in his 'Birds of Maine,' 1908, p. 260-261) dismissed this record with the remark that Mr. Norton's specimen is "not much darker in coloration than many individuals seen elsewhere. It is indeed possible that all our Maine birds are nearer the northern form and may be better regarded as all being referable to it." This is hardly the case, however, as the birds I have seen from southern and eastern Maine, taken in the breeding season, are clearly typical *virginianus* and agree with Massachusetts specimens in their clear russet facial disks and lighter coloration.

A second Great Horned Owl of the 1917-18 flight was a very pallid female bird killed at the Mount Auburn Cemetery, Cambridge, Mass., by one of the employees of the cemetery, on December 4, 1917. It was brought to the M. A. Frazar Company's taxidermist establishment and I saw the bird in the flesh shortly after. Through Mr. Frazar's interest the bird was obtained for the Boston Society of Natural History. During the past winter, 1918-19, there has again been a considerable flight of Great Horned Owls. Mr. Frazar says that over twenty had been received at his shop before January 1, 1919, where in ordinary years scarcely half a dozen come in, during an equal period. Among the birds of this year's flight was another pale individual which has also been secured by the Boston Society of Natural History.

According to the person who obtained it, it was picked up dead in Somerville, Mass., on November 26, 1918, and its death was supposed to be due to its having flown against a house, or some other obstruction, a somewhat unusual fate for an Owl. Both these birds are very similar and should evidently be referred to the same subspecies. The Mt. Auburn bird has pure whitish facial disks, and feet immaculate above, though lightly speckled with darker at the sides. The Somerville bird, a male, has the whitish facial disks somewhat washed with pale ochraceous, but the feet are pure white. A comparison of these two specimens with the pallid western birds seems to indicate that of the two large races of the interior of North America, they are best referred to the northern, *Bubo virginianus wapacuthu* (Gmelin), the Arctic Horned Owl. They are not quite so dark above as the bird of the interior United States, Dakota to Nevada (*B. v. occidentalis*) and are slightly paler in the facial area. In measurements they are of maximum size, the female with a wing of 390 mm., the male 375 mm., hence are not to be referred to the other pallid western races which are smaller. The supposed breeding range of this subspecies is north-central Canada, from Hudson Bay to Slave River, migrating occasionally south in winter to the northern United States. There is one previous record for this race in Massachusetts, namely a bird killed at Waltham, November 30, 1867, by C. J. Maynard. This specimen was formerly in the Museum of Comparative Zoölogy, but has lately been given to the Boston Society of Natural History, so that the latter institution now has all three of these Massachusetts birds. All seem remarkably similar and no doubt represent this Arctic race. In his 'Birds of the Cambridge Region' (1906, p. 204) Mr. William Brewster considers at length the status and correct name for this specimen and considers that Hoy's name *subarcticus* is more certainly applicable than the barbaric *wapacuthu*. In the paper previously cited, Norton records a bird probably of the same form under the name *B. v. arcticus*. It was presented to the Portland Society alive on December 6, 1869, and was said to be from Maine, though the exact locality was not then specified. Its color above "is pale, hoary gray: top of head much as in *virginianus*: below, white with numerous narrow, dusky bars on the feathers: feet, white, nearly

immaculate; . . . wing about 380 mm." The color of the facial disks is not mentioned. Knight in his 'Birds of Maine,' prefers to treat such birds as "extremely pale or faded individuals of the typical Horned Owl," considering the species non-migratory. This course, however, seems hardly justifiable, and to my mind the present additional records of birds identical respectively with the Labrador and the northwest Canadian forms seem sufficient proof that they have come as occasional migrants from these precarious portions of the species' range, driven from their usual year-round haunts by some causes which we have not yet wholly fathomed; but no doubt chiefly through failure of the food supply in their home regions. These constitute the first definite record for Massachusetts of the Labrador Horned Owl, and the second and third records for the Arctic Horned Owl in the same state.

VARIATION IN THE GALAPAGOS ALBATROSS.

BY LEVERETT MILLS LOOMIS.

Plates XIV-XVI.¹

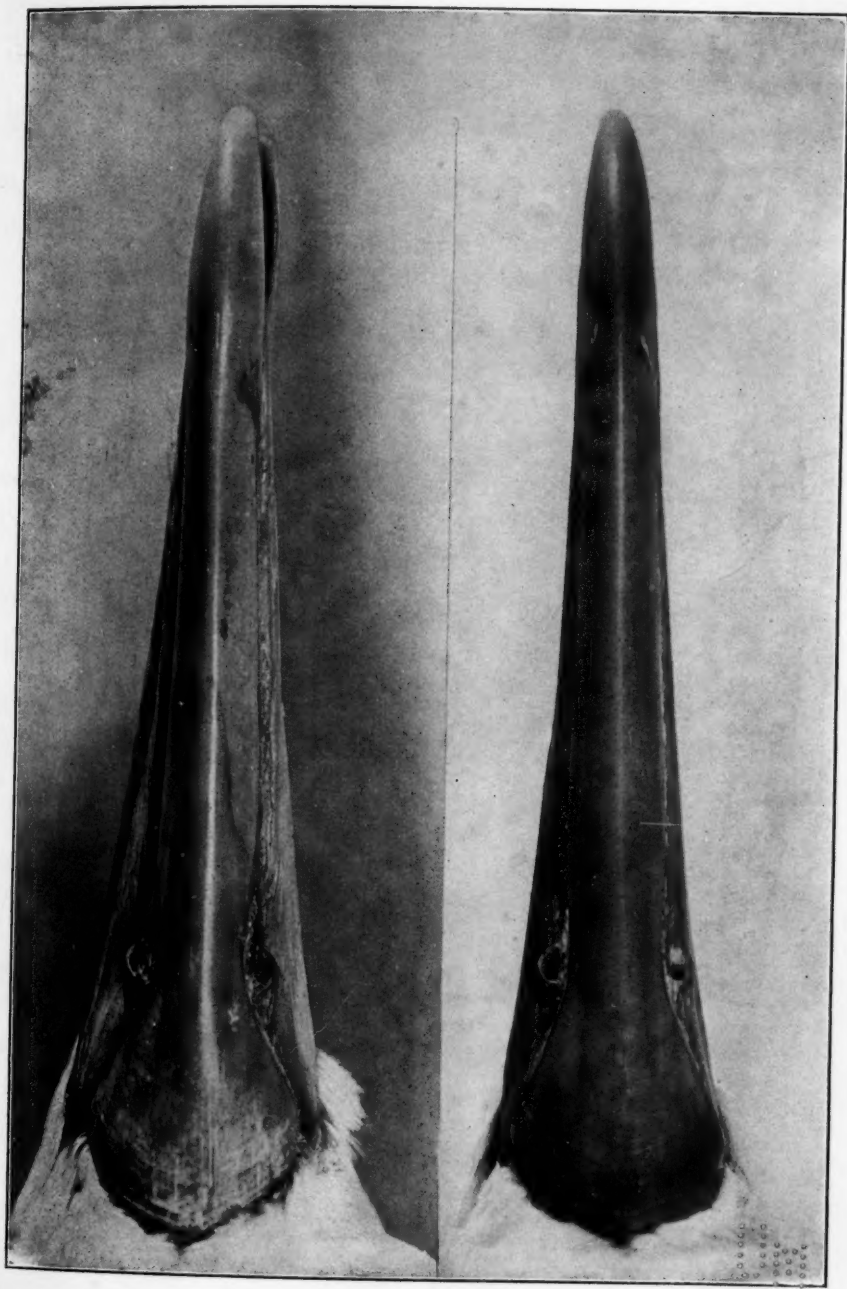
For an albatross, the Galapagos Albatross (*Diomedea irrorata*) has a peculiar distribution. It breeds in the Southern Hemisphere within less than two degrees of the equator and, so far as known, only on Hood Island of the Galapagos Archipelago. After reproduction it apparently migrates southward, as far at least as the coast of Peru.

The island isolation of this bird during its breeding season and its large size render it an attractive subject for a study of variation. The most striking differences occur in the coloration of the downy young and in the form of the bill in sexually mature individuals taken at their rookery.

¹ I am under obligations to Mr. Charles B. Barrett and Mr. L. R. Reynolds for the photographs reproduced in these plates. Mr. Reynolds photographed the downy young and the bills showing side aspect and Mr. Barrett enlarged the latter to natural size and photographed the other bills.



DOWNY YOUNG OF *DIOMEDEA IRRORATA*



DIOMEDEA IRRORATA
Culmen from above (nat. size)



DIOMEDEA IRRORATA. Bills from the side

[illegible]

Independent of age and sex, the downy young have a light phase and a dark phase connected by intermediates, constituting a definite dichromatism. Plate XIV shows the upper surface of the extremes in primary natal down (protoptyles). In the light specimen (1180 C. A. S.) the general aspect was light drab-gray and in the dark one (1185 C. A. S.) dark drab, medially lighter below and varied with dull cream color above, especially anteriorly. It may be, also, that there is a slight dichromatism in the adults, for some nesting individuals are darker than others. It is significant that the only transition nestling (1204 C. A. S.) before me is passing from the dark phase of the natal down into the darker style of the definitive plumage.

To what extent dichromatism prevails among the albatrosses is unknown. Certain of the plumages esteemed to be of specific significance by some systematists I believe to be dichromatic. The whole question of color variation in the albatrosses, and also in the other Tubinares, needs a thorough investigation.

In plates XV and XVI are illustrated the extremes in the general shape of the bill in a series of thirty-three breeding birds obtained on their rookery during eight days ending July 2, 1906. These variations occur independently of sex and, so far as ascertained, of age, the birds being sexually mature. Plate XV exhibits the difference in the width of the bill in two males (1199 and 1221 C. A. S.). In the stouter bill the basal width of the upper mandible is 35.2 mm. and in the slenderer one 31 mm. Plate XVI shows the variation in the concavity of the culmen in two females (1208 and 1225 C. A. S.). The greater concavity measures 6.5 mm. in depth and the lesser 2.5 mm. The latericorn and ramicorn, it will be noticed, also vary in form. Furthermore, the nasal tubes in the entire series of specimens vary; even in the same individuals the tubes may be unlike in shape. In their general dimensions, the specimens differ as follows:¹

Fourteen males: Wing, 550-593 mm. (572); tail, 142-158 (149); culmen, 146-160 (153.2); basal depth of upper mandible, 30.3-33.6 (31.7); basal width of upper mandible, 31-35.2 (33.4); tarsus, 91-103 (95.3); middle toe and claw, 125-138 (131.6).

¹I am indebted to Mr. Edward Winslow Gifford for making the measurements here summarized.

Nineteen females: Wing, 535-565 mm. (548); tail, 134-148 (139); culmen, 134.8-148.8 (141.2); basal depth of upper mandible, 29.6-32.6 (30.7); basal width of upper mandible, 30-33.5 (32); tarsus, 88.3-94.4 (91.6); middle toe and claw, 121.4-131.4 (125.2).

The differences recorded in the foregoing paragraphs emphasize the necessity of large series in determining the range of variation in the tubinarine species, and the futility of attributing specific value to similar differences on no better evidence than single specimens.

The future of the dichromatic and structural variations of the Galapagos Albatross is unknown, as is also the future of the island geographic variations of more widely distributed species. It is held, therefore, that any system of classification that attempts to forecast the remote future of such variations is unscientific, and destined to be discarded like the Quinary System that flourished in the time of Swainson.

AUDUBON'S BIBLIOGRAPHY.

BY FRANCIS H. HERRICK.

At the end of the second volume of 'Audubon the Naturalist'¹ published at the close of 1917, I added a bibliography of 240 titles, selective in respect to biography, criticism and miscellany, but as nearly complete as it was then possible for me to make it in other respects. The most important section was evidently that containing Audubon's principal works, five or, perhaps we should say, seven in number, namely: (1) 'The Birds of America' (4 vols. of plates only, in folio); (2) 'Ornithological Biography' (5 vols. 8vo. of text to No. 1); (3) 'A Synopsis of the Birds of North America' (1 vol.); (4) 'The Birds of America' (7 vols. of revised text and plates of Nos. 1 and 2, in octavo); (5) 'The Vivipar-

¹ 'Audubon the Naturalist: A History of his Life and Time.' In 2 vols. New York, 1917.

ous *Quadrupeds of North America*' (3 vols. of plates only, in folio); (6) *'The Viviparous Quadrupeds of North America'* (3 vols. of text only, in octavo); (7) *'The Quadrupeds of North America'* (3 vols. of revised text and plates of Nos. 5 and 6, in octavo). Four of these, the folio *'Birds'* and *'Quadrupeds,'* the *'Biography'* and the *'Synopsis'* enjoyed but one complete edition under their respective original forms. Accordingly it would seem a simple task to prepare a full, correct, and therefore final bibliographic statement regarding so short a list. Such, however, is far from the case, since the *'Birds'* and *'Quadrupeds,'* in their reduced and final form, appeared before, during and after the Civil War, in numerous *'editions'* or issues, which have proved so difficult to trace that no correct account of them has appeared up to the present time.

While bibliographic details are about the last subject to which a student of nature, with freedom of will unimpaired, would turn for refreshment, in the present case they afford a certain modicum of reward in biographical and historical interest; it is also apparent that possessors of such valuable and attractive works as Audubon's *'Birds'* and *'Quadrupeds'* have proved, are entitled to know the edition which their holding represents, as well as the time and circumstances which called it forth.

In preparing the list, to which reference was made, the principal public libraries in eastern America and western Europe were consulted, but that, it seems, was not enough, since correspondents in different parts of the country have pointed to certain errors and omissions, proving that significant sets of these works are quite as likely to be in private hands, or the smaller collections of books, as in the classic shades of the metropolis. For this service I am chiefly indebted to Rev. E. L. Shettles, of Brenham, Texas, and to Messrs. Henry Brannon, of Portsmouth, Ohio, Edward H. Johnson, of Philadelphia, and Charles E. Stratton, of Boston.

When we remember that large libraries have sometimes been guilty of eliminating titles and reducing the number of volumes which the author intended his work should represent; that Audubon's *'Birds'* and *'Quadrupeds'* in octavo form, were issued to subscribers in paper-covered parts that were liable to be dispersed or lost during the long period of disorganization which followed the

outbreak of the Civil War, and especially in the South where many of the naturalist's patrons resided; that the publication of first editions usually extended over a period of many years, that from 1854 to 1861 one or the other of Audubon's two sons was constantly projecting new issues of their father's standard works, and finally that when the collected parts came to be bound many defective sets were pieced out of two or more distinct editions,—some of the difficulties involved will be better understood. The present list is more nearly correct than any which has preceded it, but it would be remarkable if further verification and emendation were not needed.

It will be seen that the text of Audubon's 'Birds of America,' in its revised octavo form, has enjoyed no less than nine editions, namely (1) 1840–1844; (2) 1856; (3) 1859; (4) 1860; (5 and 6) 1861, one issue with, and one without, plates; (7) 1863, condition unknown; (8) 1865; (9) 1871. Excepting the possibility of error in one unverified notice (Nos. 14 and 16, below) there have appeared seven editions of text and plates combined.

The text of the 'Quadrupeds' has passed through four editions, namely (1) 1846–1853, text alone; (2) 1849–1854, text and plates; (3) 1854, text and plates; (4) 1856, text and plates, while the complete work, in octavo form, has appeared not once only, as formerly supposed, but three times.

For further detailed notes on the several editions the reader is referred to 'Audubon the Naturalist,' volume ii, Bibliography, Nos. 1–14 (which appear in brackets in the following list), pages 401–409.

Revised List of Audubon's Principal Works in their Several Editions.

1 (1). AUDUBON, JOHN JAMES:

The Birds of America, from Original Drawings by John James Audubon, Fellow of the Royal Societies of London & Edinburgh and of the Linnæan & Zoölogical Societies of London, Member of the Natural History Society of Paris, of the Lyceum of New York, &c. &c. &c. Issued without text, titles excepted, to subscribers, in 87 Numbers of 5 plates each (at 2 guineas a Part), or 435 copper-plate engravings, colored by hand, and representing 1,065 life-size figures of 489 supposedly distinct species of of North American birds, in double elephant folio. Published by the Author. London, 1827–1838.

- 2 (2). AUDUBON, JOHN JAMES, F. R. SS. L. & E. (with list of Societies):

Ornithological Biography, or an account of the habits of the Birds of the United States of America; accompanied by descriptions of the objects represented in the work entitled *The Birds of America*, and interspersed with delineations of American scenery and manners. 5 vols., royal 8vo, Edinburgh, MDCCCXXXI-MDCCCXXXIX.

Volume 1 was also issued in Philadelphia in 1831 and again in 1835, and volume 2 in Boston in 1835.

- 3 (3). AUDUBON, JOHN JAMES, F. R. SS. L. & E. Member of various scientific associations in Europe and America:

A Synopsis of the Birds of North America. Pp. i-xi, 1-359.

8vo, Adam and Charles Black, Edinburgh; Longman, Rees, Brown, Green and Longman, London, MDCCCXXXIX.

- 4 (4). AUDUBON, JOHN JAMES, F. R. SS. L. & E. (&c., &c.):

The Birds of America from Drawings made in the United States and its Territories. 7 vols. of text and plates, royal 8vo. Published by the Author and (partly) issued by J. B. Chevalier. New York and Philadelphia, 1840-1844.

First octavo edition of revised text and plates combined; issued to subscribers in 100 Parts each with 5 lithographic colored plates, or 500 plates in all, at \$1.00 a Part.

- 5 (5). AUDUBON, JOHN JAMES, F. R. S. &c., &c., and BACHMAN, THE REV^d. JOHN, D. D. &c. &c.:

The Viviparous Quadrupeds of North America. 3 vols. of 150 lithographic colored plates; imperial folio. Published by J. J. Audubon, New York, 1845-1848.

Vol. I. Parts 1-10, pll. 1-50, 1845.

Vol. II. Parts 11-20, pll. 51-100, 1846.

Vol. III. Parts 21-30, pll. 101-150, 1848.

Issued to subscribers in 30 Parts of 5 plates each, size 28 x 22 inches, to compose 3 volumes (though sometimes bound in 2 with one title omitted), at \$10 a Part, or \$300, without text except titles, tables of contents and names on plates.

- 6 (6). AUDUBON, JOHN JAMES, F. R. S. &c., &c., and BACHMAN, THE REV. JOHN, D. D. &c. &c.;

The Viviparous Quadrupeds of North America. 3 vols., royal

8vo. Published by J. J. Audubon and V. G. Audubon, New York and London (in part), 1846-1853.

First edition, without plates, issued to subscribers as text to the foregoing.

Vol. I. Pp. i-xvi, 1-390. Published by J. J. Audubon, New York, 1846.

Vol. I. (European ed.). The same as foregoing with imprint of Messrs. Wiley & Putnam. London, 1847.

Vol. II. Pp. 1-336. Published by V. G. Audubon, New York, 1851.

Vol. III. Pp. i-vi, 1-257. Published by V. G. Audubon. New York, 1853.

A supplement of 93 pages and 6 colored plates, added in 1854, and apparently issued to all previous subscribers to this and the large folio, is sometimes bound up with the third volume of the present edition, when the date of which is usually quoted as "1854."

7. AUDUBON, JOHN JAMES, F. S. R. (&c., &c.), and BACHMAN, THE REV. JOHN, D. D. (&c., &c.):

The Quadrupeds of North America. 3 vols. royal 8vo, with 155 lithographic colored plates. Published by V. G. Audubon. New York, 1849-1854.

Vol. I. Nos. 1-10, pp. i-viii, 1-383: 1849.

Vol. II. Nos. 11-20, pp. 1-334: MDCCCLI.

Vol. III. Nos. 21-31, pp. iii-v, 1-348: 1854.

First edition of text and plates in octavo; issued to subscribers in 31 Parts (in printed covers) of 5 plates each, at \$1.00 a Part, the number of plates being reduced to 155 by the omission of one of the small plates in the supplement noticed above. A set in the original (unbound) paper-covered Parts was quoted by Samuel N. Rhoads in his catalogue (No. 39) on "Auduboniana and other Nature Books" issued in 1919.

- 8 (7). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.), and BACHMAN, THE REV. JOHN, D. D. (&c., &c.):

The Quadrupeds of North America. 3 vols. royal 8vo, with 155 lithographic colored plates. Published by V. G. Audubon, New York, 1854.

Second edition of text and plates.

9. AUDUBON, JOHN JAMES, F. R. S. (&c., &c.), and BACHMAN, THE REV. JOHN, D. D. (&c., &c.):

The Quadrupeds of North America. 3 vols., royal 8vo., with 155 lithographic colored plates. Published by V. G. Audubon, New York, 1856.

The third and, so far as known, the last octavo edition of text and plates. Issued like the two preceding in 31 Parts; According to Rev. Mr. E. L. Shettles, of Brenham, Texas, who has furnished me with data concerning this hitherto unnoticed edition, the plates bear the legend: "Drawn on stone by Hitchcock."

- 10 (8). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America, from Drawings made in the United States and their Territories. Vols. I-VII, royal 8vo. Published by V. G. Audubon, (R. Craighead, printer and stereotyper; 52 Vesey Street, New York, 1856.

The second octavo edition of Audubon's *Birds*, with 500 plates, but now appearing for the first time with colored backgrounds. According to Rhoads (*loc. cit.*) several of the plates were redrawn for this edition; the pagination is identical with that of the first edition, "but the text has been reset in a slightly different style of type."

11. AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America, from Drawings made in the United States and their Territories. Vols. I-VII, royal 8vo., with 500 colored lithographic plates. Issued by V. G. Audubon. Roe Lockwood & Son, 411 Broadway. New York, 1859.

The third octavo edition of the text and plates of the *Birds*. On the second page of volume 1 appears: "Entered according to Act of Congress 1839 by J. J. Audubon, in the clerk's office of the district court of the United States for the Southern district of New York," and in the lower left hand corner the following: "R. Craighead, Printer, Stereotyper, and Electrotyper, Caxton Building, 81, 83, and 85 Centre St." According to Rev. Mr. Shettles, who possesses a copy of this unnoticed edition, the paging of the respective volumes (omitting front matter, which is presumably the same as in No. 4 of the pre-

ceding list¹) is as follows; 246, 199, 233, 321, 346, 456, and 372; the distribution of plates follows the first edition (No. 4, above). The plates bear the legend: "Lith., Printed, and Colored by Bowen and Co., Phila."

12. AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America, from Drawings made in the United States and their Territories. Vols. I-VII, royal 8vo., with 500 lithographic colored plates. Issued by V. G. Audubon, Roe Lockwood & Son, 411 Broadway. New York, 1860.

The fourth octavo edition of the text and plates of the 'Birds.' According to my correspondent, Mr. Henry Bannon, a set of this unnoticed edition is in possession of the Public Library at Portsmouth, Ohio (volume 2, however, being from the third edition of 1859).

- 13 (9). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America; from original Drawings by John James Audubon, Fellow of the Royal Societies of London & Edinburgh, &c., &c., &c. Reissued by J. W. Audubon. 1 vol. of 106 double elephant folio plates, in chromolithography, by J. Bien, 180 Broadway, representing 151 of the original copper plates. Roe Lockwood & Son, Publishers. New York, 1860.

The only (partial and greatly inferior) reissue of the original folio.

- 14 (10). AUDUBON, JOHN JAMES:

The Birds of America, from Drawings made in the United States and their Territories, by John James Audubon, F. R. S., &c. Reissued by J. W. Audubon. Vols. I-VII, royal 8vo. Text only. Roe Lockwood & Son, Publishers. New York, 1861.

Vol. I, pp. i-viii, 11-246; Vol. II, pp. i-viii, 11-200; Vol. III, pp. i-viii, 9-234; Vol. IV, pp. i-viii, 9-322; Vol. V, pp. i-viii, 9-346; Vol. VI, pp. i-viii, 2-322; Vol. VII (not seen).²

First edition (in brown stamped cloth), without plates, and fifth octavo edition of the text of the 'Birds'; apparently

¹ See 'Audubon the Naturalist,' *loc. cit.*

² According to a copy quoted for me in detail, pp. 1-360 to which are added index to folio volume of plates pp. i-iv and index to the whole work pp. 361-372. The set to which this volume belonged was bound uniform with a copy of the 1860 folio plates and was obviously intended to accompany it as shown by index to plates, mentioned in Vol. VII.—WITMER STONE.

issued as text to the imperfect folio (see No. 13) described above. Rhoads (*loc. cit.*) lists, with a set of this edition, 2 vols. of 500 uncolored plates, in octavo, "bound in cloth to nearly match the seven volumes of text." The plates in this instance seem to have been issued to favor a particular purchaser.

- 15 (11). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

'The Birds of America' Reissued by J. W. Audubon. Vols. I-VII, imperial 8vo., with 500 lithographic colored plates, 10 × 7 inches. Roe Lockwood & Son, New York, 1861.

Fifth complete octavo edition (and sixth of the text) of the 'Birds.' Reference partly from Coues' 'Birds of the Colorado Valley,' Bibliographical Appendix: "List of Faunal Publications relating to North American Ornithology" (Washington, 1878).

- 16 (12). AUDUBON, JOHN JAMES:

'The Birds of North America,' a popular and scientific description of the Birds of the United States and their territories. New Edition. New York, 1863.

Not seen; supposed by Coues to be a reissue of the edition of 1856 or of 1861. If complete, the sixth octavo edition (and, if without plates, the second edition of the text alone) of the 'Birds.' As to plates, see note under 14.

- 17 (13). AUDUBON, JOHN JAMES:

'The Birds of America' 8 vols., 8vo. New York, 1865.

The eighth edition of the text of the 'Birds,' and according to Coues a reissue of the edition of the text only, by J. W. Audubon, in 1861 (see No. 14 above), but in 8 instead of 7 volumes.

- 18 (14). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

'The Birds of America,' from Drawings made in the United States and their Territories. Vols. I-VIII, imperial 8vo. George R. Lockwood, late Roe Lockwood & Son, 812 Broadway, New York. No date (1871.)

Vol. I, pp. i-viii, i-xv (memoir), 11-246, pll. 1-70; Vol. II, pp. i-vii, 11-199, pll. 71-140; Vol. III, pp. i-viii, 9-233, pll. 141-210; Vol. IV, pp. i-viii, 9-321, pll. 211-280; Vol. V,

pp. i-viii, 9-346, pll. 281-250; Vol. VI, pp. i-vii, 9-298; Vol. VII, pp. i-vii, 9-285, pll. 395-440; Vol. VIII, pp. i-viii, 9-256, pll. 441-500.

The seventh complete (? see Nos. 14 and 16, above), last and ninth edition of the text of Audubon's 'Birds.'

Sets of this issue, but without plates (and also bearing no date) were apparently circulated to some extent; at least one, answering to this description, was offered for sale in New York in January of this year.

SOME SUMMER BIRDS OF LIBERTY COUNTY, GEORGIA.

BY W. J. ERICHSEN.

To so thoroughly investigate the summer bird life of any selected area as to leave but slight room for belief that additional species, unsuspected of breeding in the area, would ever be subsequently discovered, would require continuous field work extending over a period of several years; therefore the present paper, based on notes made by the writer during a ten months' residence, from January 3 to November 1, 1913, at Allenhurst, Liberty County, Georgia, can in no wise be considered as being more than a brief review of the more common and characteristic breeding birds of the county. It is rather a preliminary list, intended for further elaboration by, and as information for, future workers in the field which it covers, and for the use of anyone who may be contemplating the compilation of a complete list of the birds of the state, to both of whom it may, I hope, prove of some value. Very little has been put into print respecting the avifauna of the coast region, or indeed of any part of the state of Georgia, and anything pertaining thereto, however meagre and of a local character, is a welcome addition to our knowledge of the state's bird life. It is with this realization that ornithological literature is almost destitute of

references to the birds of Georgia, that I contribute these few notes. There has recently come to my notice an article by H. B. Bailey in the 'Bulletin of the Nuttall Ornithological Club,' Vol. 8, January, 1883, consisting of notes on a collection of eggs made in McIntosh and Wayne counties, Georgia, by Dr. S. W. Wilson. These counties adjoin Liberty County on the south and southwest respectively, and each presents a topography differing but little from that of that county. Dr. Wilson evidently made some errors in identification and also in his notes relating to nesting sites selected and material used in nest construction by several of the species he met with.

The avifauna of Liberty County is unusually varied and abundant, particularly as regards the water birds, and it is with regret that my short residence there would not permit of my securing sufficient notes on which to base a more complete list, including migrants and winter visitants.

Weather conditions were favorable almost the entire spring and summer, admitting of nearly continuous field work which obviously has a considerable advantage over desultory observations where much work is to be done in a single nesting season.

It may be well to make a few general remarks on the topography of the region under consideration and give some points of information in regard to the conditions affecting the distribution of summer bird life within the county. Although primarily intended as an exposition of some of the breeding species, it may not be out of place to add a few remarks on its bird life in general. With a combination of favorable topographical features the avifauna of the county is, as before stated, rich in species; the coast line of approximately ten miles attracting numerous water birds, while the swamps, uplands, cultivated lands and pine barrens, the latter mostly free from undergrowth, all present conditions suitable for many species of land birds. The region covered by this paper also includes St. Catherine's Island, a large sea island, which presents topographical features differing in no essential particulars from those of the mainland. This island and its surrounding waters are favorite resorts for large numbers of Ducks, Shorebirds, Herons, Gulls and Terns, as well as for many species of the smaller land birds.

As references in the list will show, most of my field work was done within a five mile radius of the town of Allenhurst, near the geographical center of the county, excursions being made however to all other points of the region at frequent intervals, particularly to the coast, where several interesting finds were made.

The region under consideration, in area the third largest county in Georgia, is a succession of swamps, rolling uplands, pine barrens, scrub oak woodland and abandoned rice plantations, which latter are particularly attractive to many species of marsh loving birds, such as various species of the *Rallidae*, Blackbirds, Grackles, as well as many of the smaller swamp loving species. There is an absence of large heavily timbered areas in the county, due to the extensive operations of the large lumber plant located at Allenhurst, although many smaller patches of fairly heavily timbered land still remain, particularly near the coast.

Short leaf pine, ash, hickory, cypress, red and black gum, tupelo and various species of oak form the major portion of the forests, while large areas of more or less thickly matted and tangled undergrowth are scattered all over the county, forming agreeable retreats for birds. Other forest trees found in more or less abundance include yellow poplar, sassafras, wild cherry, bay, laurel, red maple, red cedar, holly and palmetto, the latter three being particularly numerous on St. Catherine's Island. Spanish bayonet thickets are almost a feature in the landscape in the vicinity of the coast and on the islands.

Altamaha River is the largest in Liberty County, and separates it from Wayne County on the southwest. The swamps on both sides of this river are almost impenetrable, worthy rivals of the famous Okefinokee Swamp in southeast Georgia, and harbor rookeries of the Louisiana, Little Blue and Green Herons, and are the breeding place of several other species. Lack of time prevented me from doing much work here. The Canoochee to the north, a medium sized river, forms a part of the boundary line between Liberty and Bryan Counties, while the North and South Newport Rivers, in the southeastern section of the county, complete the list of principal streams. Beard's Creek, a small branch emptying into the Altamaha, flows through the extreme eastern part of the county. Taking into consideration St. Catherine's Sound, which extends

some distance westward between Bryan and Liberty Counties, we find that the latter is almost completely surrounded by bodies of water varying in size from the broad ocean to a small creek. Besides this, numerous small creeks traverse the interior, and several ponds, caused chiefly by the overflow from the abandoned rice fields, dot the county, particularly that section immediately bordering the Altamaha River. In years past this was one of the largest rice producing sections on the South Atlantic coast, but little evidence of this now remains, the once symmetrical network of irrigation canals now being but a labyrinth of canoe trails used by gunners.

But a small portion of the county is under cultivation, the large areas of low swampy ground, covered much of the time with water, together with the abandoned rice fields, unfit for any other use, forbid any very extensive diversified farming.

One of the most interesting experiences of my residence in the county was the noting of many wild turkeys in the swamps, Liberty County being probably one of the last strongholds of this species on the coast of Georgia.

Although so far as I know I was the only one in Allenhurst interested in bird study, I am indebted to many residents of the place for courtesies extended, particularly to the Dunlevie Lumber Company, on whose motor car many trips were made out the tram road to points of interest which were accessible for hurried visits only by this means of transportation.

It might be well to state here that expressions of the degrees of abundance of individuals in the county refer only to the occurrence of the species during the nesting season or the period of my residence. Many of my notes were written during my residence in Liberty County and were intended for early publication, and I have allowed them to stand unaltered, with the exception of some few additions and omissions.

1. **Anhinga anhinga.** WATER TURKEY.—On May 11, I located a nest of the Water Turkey containing four eggs. It was built in a small willow, growing in two feet of water near the margin of a large rice field reservoir, and was placed about four feet above the surface of the water, being composed of a few sticks loosely laid together. There are many suitable nesting places among the abandoned rice plantations, and the

presence there of many of these birds throughout the summer can be accepted as conclusive evidence that the Water Turkey breeds abundantly.

2. *Hydranassa tricolor ruficollis*. LOUISIANA HERON.

3. *Florida cærulea*. LITTLE BLUE HERON.

4. *Butorides virescens virescens*. GREEN HERON.—On April 28 I paid a visit to a rookery containing several nests of the Louisiana Heron besides many of the Little Blue and Green Herons. The nests of the two former species were all placed at such heights that, lacking the necessary equipment with which to make ascents, I was unable to examine their contents. There is little doubt, however, but that many of the nests contained full complements of eggs at this date, as the birds were continually flying to and from them. The majority of the nests of the Green Heron were placed at low altitudes, mainly from four to twelve feet above the water which covered the swamp, and were easy of access. Of twelve nests examined, nine contained four eggs each, and the remaining three held three eggs each.

Although the Green Heron must nest at many other localities in the county, these were the only nests that came under my observation. As for the Little Blue and Louisiana Herons, it is doubtful or extremely improbable that any other colonies exist in the county, as personal efforts as well as those of several correspondents failed to discover any.

This rookery is situated in a remote part of the Altamaha swamp near the McIntosh county line, and is probably known to but few persons. The majority of the trees are cypresses of large size, with a few isolated gums and willows on the outskirts. To my regret I was unable to pay a second visit to this interesting place.

Since the above was written, I have been informed that a colony of American Egrets and Snowy Herons exists in the Altamaha river swamp near where the Seaboard Air Line Railway bridge crosses that river.

5. *Rallus elegans*. KING RAIL.—On April 20, quite by accident, I stumbled upon a nest of the King Rail containing six eggs. On the afternoon of the 25th, I returned to the nest which then held eleven eggs, showing that the female had deposited an egg every day. The nest was placed fourteen inches above water, in rushes growing in an abandoned rice plantation, and was composed of the stalks and leaves of cattail flags. Additional field work would undoubtedly prove the King Rail to be a common breeder in the county.

6. *Rallus crepitans waynei*. WAYNE'S CLAPPER RAIL.—This rail is confined exclusively to salt water marshes and is abundant. The marshes bordering the mainland and inland islands north of St. Catherine's island are their favorite resorts, although they are found more or less abundantly in all of the salt marshes bordering the rivers and creeks that go to make up the extensive inland waterway of Liberty county. A nest found May 9 contained eleven eggs. On July 19 I noted a nest containing seven eggs. These nests were composed of the blades and stems of the marsh grass and were placed in the marsh just above high water mark.

These birds evidently have not learned of the danger from unusually high spring tides, as when these occur, many of their nests which are placed out of reach of normal tides, are destroyed.

7. *Catoptrophorus s. semipalmatus*. WILLET.—The Willet breeds in much the same situations as the Wilson's Plover, except that perhaps the former shows a more decided preference for the high grassy stretches well back from the beach. A few grass stems are laid in a depression made by the birds, usually at the base of a bunch of grass or weeds. Often-times no material is used, the eggs being deposited in a bare hole scooped out by the birds.

Two nests were located by me on July 19 among high grass well back from the beach on St. Catherine's island. Both held four eggs. Incubation was evidently advanced at this late date.

Willetts show much concern when their breeding grounds are invaded, flying overhead and emitting shrill cries until the intruder has withdrawn.

8. *Ochthodromus wilsonius*. WILSON'S PLOVER.—The Wilson's Plover is a characteristic bird of the beaches and mud flats and is abundant on St. Catherine's island. The birds appear to prefer as nesting sites, isolated beaches bordering on sounds and inlets where there are numerous tussocks of grass and an abundance of small shells among which they lay their eggs. Three eggs are laid in a hole scooped out in the sand, usually among short beach grass and on slight elevations formed by drifting sand. Although the birds breed abundantly on the island, my visit there was made on July 19 near the end of the breeding season, and I located but two sets of eggs.

9. *Chæmepelia passerina terrestris*. GROUND DOVE.—The Ground Dove is locally distributed in the county, and but two nests came under my observation. On May 1 I located a nest containing two fresh eggs, and on May 13 a second nest was found which also contained two eggs. The former was situated three feet up in a scrub oak, while the nest found May 13 was nine feet from the ground on a horizontal limb of a large pine and some distance from the trunk of the tree. Both nests were composed merely of a few twigs and dead pine needles, almost falling apart at the touch.

The Ground Dove shows a decided preference for scrubby pastures, and woodland where there is much undergrowth, and, like the Bob-white, does not wander far from the locality in which it was hatched. Many Ground Doves nest on the ground, and use even less material in such cases than when placed in trees or bushes.

I have been informed that eggs of this bird have been collected outside but near Liberty county in every month from March to October inclusive, a remarkably long nesting period.

10. *Haliaeetus leucocephalus leucocephalus*. BALD EAGLE.—On January 9 I flushed a Bald Eagle from a nest on St. Catherine's island, but was unable to ascertain its contents. It was built in a large short leaf pine, approximately eighty-five feet from the ground, and was of massive

proportions, evidently having served as a home for the birds for a number of years. I was told that several pairs of these birds bred on the island, but I was unable to pay a visit to their nests.

11. **Pandion haliaetus carolinensis.** OSPREY.—Fish Hawks are numerous on St. Catherine's island and I am told that at least ten pairs regularly nest on the island. A nest on the south end was occupied at the time of my visit on May 4. The birds return to the same nest year after year, adding material each season, until the structure becomes of large size.

12. **Coccyzus americanus americanus.** YELLOW-BILLED CUCKOO.—Locally known as the 'Rain Crow,' this bird is moderately common in the county. On May 17, near old Midway church, I found a nest seven feet from the ground on a horizontal limb of a live oak, well out from the trunk of the tree. The nest was the usual frail platform of twigs characteristic of this species and contained three young.

In its choice of nesting sites, the Yellow-billed Cuckoo shows no preference for any species of tree or character of woodland, but as a rule, although not invariably, it selects a horizontal limb.

13. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER.—Although not as abundant as the Flicker, the Red-headed Woodpecker nests in much the same situations as the former species, but as a rule, excavates its hole at a greater height than the Flicker. A nest noted May 28 at a height of twenty-eight feet contained five eggs. A subsequent visit to the nest disclosed the fact that the tree had been felled by the wind, breaking the eggs and killing the sitting bird.

14. **Colaptes auratus auratus.** FLICKER.—Liberty county contains large areas of cut over lands with many stumps and dead trees, a condition favorable to the increase of the Flicker. The birds are as a result very abundant, nesting in close proximity to houses and as often in the woods far from dwellings. Although several birds were noted entering and leaving their nesting holes, I examined but one of the latter. This was ten feet from the ground in a telegraph pole opposite the depot at Allenhurst, and contained six fresh eggs on May 6.

15. **Antrostomus carolinensis.** CHUCK-WILL'S WIDOW.—This interesting bird is abundant in the county, particularly on St. Catherine's island and adjoining hammocks. It inhabits thick dry woods where the sun seldom penetrates the heavy foliage during the summer months. At least a month elapses after arrival of the birds before the eggs are laid, and from observations made by me in Liberty and nearby counties, covering a period of six years, I am convinced that but a single brood is raised. Their two eggs are laid on the ground, usually on or among dry leaves, and are, contrary to popular belief, unusually conspicuous in their setting.

The Chuck-will's Widow flushes when the intruder is yet some distance away, and rises with a guttural squawk, to my ears unlike any other sound in nature. It is eminently crepuscular in habits, but when flushed during the daytime flies with ease and rapidity through the maze of trees until lost to view.

To test the truth of the report that these birds remove their eggs a short distance when touched, I purposely handled every one of the four sets found, being careful to mark the exact spot where they lay, but on returning to the eggs, I found every one in the spot where I had left it, none having been moved so much as an inch. I have made this test repeatedly in several other localities on the coast of Georgia, but always with the same result.

Eggs were found on May 3, May 13 (two sets), and May 26, all in the immediate vicinity of Allenhurst.

16. **Tyrannus tyrannus.** KINGBIRD.—Not an uncommon species, but rather locally distributed. It shows a strong attachment to the vicinity of farmhouses, and often ventures to nest in the shade trees in the towns. On May 22, I noted a nest containing four eggs. It was placed fourteen feet from the ground in a China-berry tree growing in the yard at the rear of the hotel at Allenhurst. This nest was later destroyed by the wind, but the birds rebuilt in the same tree and not over five feet from the site of the first nest, and were successful in rearing a brood.

17. **Myiarchus crinitus.** CRESTED FLYCATCHER.—This species breeds in large numbers on St. Catherine's island, but appears to be very locally distributed on the mainland, due no doubt to the scarcity of cedars there, as the birds show a strong preference for nesting in these trees, whenever they contain suitable hollows. A nest found May 4 on the island was in a natural cavity of a cedar, nine feet from the ground, and contained five eggs which were unusually heavily marked. An entire cast-off snake skin twenty-two inches in length constituted over half of the nest material.

18. **Cyanocitta cristata cristata.** BLUE JAY.—On June 12 at about dusk, near the town of Walthourville, I noted, at a height of about twenty-five feet, a bulky nest which I suspected was of this species. Wishing to be sure, I loitered around a few minutes, and was rewarded by seeing a Blue Jay settle on the nest. I was unable to examine the contents of the nest, and had no opportunity to revisit it. It was some distance out on a horizontal limb of a live oak. This species is not uncommon in the county, but I failed to discover any additional nests.

19. **Agelaius phoeniceus phoeniceus.** RED-WINGED BLACKBIRD.—A colony of at least twenty-five pairs of these birds were noted nesting in some tall cat-tails growing in and around a fresh water pond located a short distance from Allenhurst. On May 8 nearly every nest contained four eggs, the birds evidently having begun nesting simultaneously. I revisited the pond on May 25, at which date many of the nests contained well fledged young, while additional nests with fresh eggs were noted. The nests were of the usual construction, being composed of the blades and stems of the different species of vegetation growing in the pond. The average heights of the nests were four feet, the lowest and highest being, respectively, 14 inches, and six feet six inches. No other Blackbird colonies of this size were discovered in the county, although scattered pairs of birds were noted nesting among the abandoned rice fields.

20. *Icterus spurius*. ORCHARD ORIOLE.—Two nests of the Orchard Oriole were noted, both placed in shade trees bordering a roadside, an environment to which this species appears to be almost wholly restricted. The first nest, found May 31, contained five well fledged young. On June 4, I located another containing four fresh eggs, undoubtedly a second laying. Both nests were placed in the apex of small sweet gums, at heights of nine and thirteen feet respectively, and were composed of blades of different species of grass woven in when green, but which had faded very much. Thistle-down constituted the linings, with the exception of a few fine hair-like rootlets.

21. *Megaquiscalus major major*. BOAT-TAILED GRACKLE.—This is a characteristic bird of the salt marshes, breeding in large colonies. On May 9 I examined upwards of seventy-five of their nests in the tall marsh bordering the numerous hammocks and islands north of St. Catherine's island. Many nests contained young, but the majority held eggs. Several of the sets were incomplete, but in no case were more than three eggs or young noted in any nest, which number appears to be the full complement. The nests were composed of the blades and stalks of the marsh grass. Mud is largely used in their construction also, which upon hardening renders the nests almost indestructible by the elements, some retaining their original shape and solidity after being exposed for two or three years.

22. *Pipilo erythrophthalmus alleni*. WHITE-EYED TOWHEE.—Although not uncommon in the county, the White-eyed Towhees are very secretive in their nesting habits, often building their nests on or near the ground, and when so placed are very difficult to locate. On May 20 I discovered a pair of these birds building in some dense undergrowth bordering the tram road about a mile distant from Allenhurst. I withdrew a short distance to watch them at their work, in order to learn more of their nesting habits, but although I remained quiet and almost concealed for nearly half an hour, neither one of the birds returned to the nest while I remained in the neighborhood. On June 1 this nest contained three eggs. Continuing to search in the vicinity, I succeeded in finding another, containing three piped eggs. Both nests were placed twelve inches above the ground in gall-berry bushes, and were composed almost entirely of weed stalks and long dry grass blades, the latter material predominating, and lined with rootlets and grass stems.

23. *Cardinalis cardinalis cardinalis*. CARDINAL.—This fine bird is abundantly distributed over the county, nesting in equal abundance in all of the many and varied environments which the county has to offer. As attesting the wide diversity in character of woodland frequented by this species, particularly during the nesting season, I will state that I noted their nests far in the interior of almost impenetrable swamps; in willows growing in water in rice fields, and in high open woods of mixed coniferous and deciduous growth, as well as in bushy pastures and among trees and undergrowth bordering roadsides. April 26 is the earliest date on which I noted fresh eggs. Well fledged young were noted in the nest

July 4. Between and including the two dates mentioned, I found eight nests, six containing three eggs each, and two with young. Sets of more than three eggs are extremely rare, for during these and previous observations elsewhere in Georgia, covering a period of several years, I have never noted a nest containing a larger number than this, and very often but two eggs are laid. The heights at which these nests were placed varied from three to ten feet, averaging about seven feet. They were composed of weed stalks, moss, dead leaves and trash, lined with grass stems, rootlets and pine straw, and were very loosely constructed, this being a characteristic of the nest of this species.

24. *Passerina ciris*. PAINTED BUNTING.— This highly colored bird nests abundantly in the county, frequenting scrub oak woodland, bushy pastures and undergrowth bordering roadsides. The birds are absent entirely from heavily timbered tracts and the interior of swamps, occasionally however, nesting among the low undergrowth bordering the latter. My earliest and latest dates when fresh eggs were found are May 14 and July 19 respectively. Well fledged young were noted in the nest July 25. Between, and including the two dates first mentioned, I located twelve nests of this species which contained eggs, besides several nests in which were young of various stages of growth. Of the twelve nests noted nine held three eggs each, and the remaining contained four each. The majority of the nests were in small gums and scarlet oaks, with an occasional nest in vines and sumach, and were placed at heights ranging from two feet six inches to eleven feet, averaging about six feet. All were composed of leaves and grasses, lined with rootlets and, in several instances, with horsehair. Practically no variation in materials used was noted. This species often nests in festoons of the Spanish moss, and the nests when so placed are difficult to discover.

25. *Piranga rubra rubra*. SUMMER TANAGER.— This species breeds abundantly, especially in localities where there are large areas of second growth scrub oak woodland. Although the birds arrive early in April, they do not commence nest building until the latter part of that month, and it is often well into May before full complements of eggs are found. I noted three nests of this species, two of which were placed on the extremity of horizontal limbs of scarlet oaks. These two nests were so close to the ground that by bending the limbs down a few inches, the contents could be easily examined. In striking contrast to the low heights at which these two nests were placed, was one I found on May 13. It was built almost at the extreme end of a horizontal limb of a huge black gum at a height of approximately fifty-five feet, and was inaccessible. The two nests whose contents I was able to examine each contained four eggs. Dates were May 8 and 20. The Summer Red-bird constructs a very shallow and flimsy nest, almost always composed wholly of the bleached stems of the wild pepper plant, which abounds in the south Atlantic states, and in nearly every instance the eggs are visible from the ground through the nest. The three nests noted by me were located in a tract of mixed woods near Allenhurst.

26. *Progne subis subis*. PURPLE MARTIN.—Four colonies were noted in the county, two at Walthourville, one at Hinesville and one near Sunbury, in addition to other colonies which were reported to me. About twelve pairs of birds comprised each colony. Boxes and gourds put up for the purpose were used for nesting.

27. *Lanius ludovicianus ludovicianus*. LOGGERHEAD SHRIKE.—The single nest of this species that I found was placed five feet above the ground in thorny bushes bordering a roadside near McIntosh; it was composed of thorny sticks and twigs, weed stalks and trash, lined with rootlets, and contained four eggs on April 6. This species is very locally distributed in the county, a fact however not at all to be regretted.

28. *Vireosylva olivacea*. RED-EYED VIREO.—On May 21, in a patch of deciduous woods between Walthourville and Allenhurst, I found a nest of this species containing three heavily incubated eggs. It was placed twelve feet from the ground near the end of a horizontal limb of a sweet gum, and directly over a much frequented road. On June 2, in the same piece of woods, I noted a second nest containing three eggs. This was built in a dogwood tree at a height of only five feet. This species constructs a nest of material similar to that used by the White-eyed Vireo, and inhabits much the same character of woodland. Its nest however is, as a rule, much less deeply cupped, and the lining differs in being composed of pine needles and rootlets.

A peculiarity of this species which I have noted both in Liberty county and elsewhere is a habit the birds have of destroying partially completed nests built by them. I once watched a pair remove piece by piece the material from a nearly completed nest, and weave it into another which they had begun a few yards distant. This is a habit of the Red-eyed Vireo which I have not seen mentioned in ornithological literature.

29. *Vireo griseus griseus*. WHITE-EYED VIREO.—Abundantly distributed. The White-eyed Vireo inhabits moderately timbered districts and bushes. It places its nest in the fork near the end of a horizontal branch. Four nests were noted, each containing four eggs. Two were in small sweet gums, four feet from the ground; one in a myrtle bush at a height of ten inches, and one three feet up on a low limb of a large silver leaf maple. They were composed largely of dead cane leaves, interwoven with grape-vine bark, and had numerous small pieces of rotten wood secured to the exterior with spider web. Much of the latter material, interwoven with fine rootlets, was attached to the rim of the nests, being used to secure them to the limb. The linings were composed of fine rootlets and grasses. All of these nests were found on the margin of a small swamp near Allenhurst. Dates: April 22, two nests, April 29 and May 7.

30. *Compsothlypis americana americana*. PARULA WARBLER.—But a single nest of this species came under my observation, although I searched for them many times in the festoons of Spanish moss which hang in profusion from the ancient live oaks at old Midway cemetery and other points near the coast. The nest was placed only six feet from the ground

in a festoon of moss, and was a rather shabby affair composed of the fibres of the moss, and grass stems, lined sparingly with fine dry grasses and rootlets, and held four fresh eggs on May 2. This species, as well as the Yellow-throated Warbler, is dependent altogether on the Spanish moss for nesting sites. I might add that although I searched many times for the nest of the Yellow-throated Warbler in these oaks at Midway, as well as at other places where moss abounds, I was unable to locate a single one.

31. **Dendroica discolor.** PRAIRIE WARBLER.—Although the Prairie Warbler breeds commonly in the scrub oak woodland and bushy pastures in the interior of the county, I located but a single nest. It was placed seven feet from the ground in a cedar in an open pasture, two miles south of Hinesville. It was an unusually handsome specimen of bird architecture, deeply cupped, composed of fine grass stems and plant down, lined with hair, and contained three fresh eggs on May 12, I returned to the nest two days later at which time it held four eggs.

32. **Wilsonia citrina.** HOODED WARBLER.—The Hooded is another species of Wood Warbler whose nesting in the county is recorded in my note book but once. This nest was located on May 4, and contained four eggs well advanced in incubation. It was placed four feet from the ground in canes growing in a dense swamp nine miles from Allenhurst, and within one hundred feet of a tram road over which heavy log trains passed several times daily. The nest was a dainty little home, woven of cane leaves, weed stalks and bark strips, and was lined with fine rootlets, and secured to the cane stalks with caterpillar silk.

33. **Icteria virens virens.** YELLOW-BREASTED CHAT.—The nesting of this secretive bird in the county has fallen under my observation but once, and then only after a hard half hour search in a dense thicket of blackberry briars three miles from Allenhurst, near a road between that town and Hinesville. The nest was a bulky affair, placed three feet up in the briars, and was composed of weed stalks, cane leaves, and several strands of grapevine bark, lined with fine grasses. This nest was found on May 16, and contained four eggs which must have been in an advanced stage of incubation, for on revisiting the nest nine days later it held well-feathered young. The Yellow-breasted Chat is common in the county, and during the months of May and June, I have often observed their amusing aerial acrobatic stunts. After the latter month, the birds become silent, and are extremely shy and rarely observed.

34. **Mimus polyglottos polyglottos.** MOCKINGBIRD.—The Mockingbird breeds abundantly in orchards and shade trees in and around the towns and settlements throughout the county. Between April 9 and July 16 I counted no less than twenty-four nests of this bird with eggs or young in the towns of Allenhurst, Hinesville and Walthourville, besides several nests in course of construction which were not revisited. One nest was placed among a clump of vines screening the front porch of a residence at Hinesville, and another was built in a small shrub in the front yard of a house in the same town. The remaining nests were distributed among

the shade trees, orchards, and isolated bushes in the vicinity. The nests were composed of twigs, grapevine bark, plant fibre and trash, lined with rootlets. Of the nests noted, sixteen held four eggs each, two held three eggs each, and two contained five eggs each, all in various stages of incubation, while four nests contained four young each. The heights ranged from three to nineteen feet, averaging about five feet. My earliest and latest dates when full complements of eggs were noted, are, respectively, April 9, set of four, and July 16, set of three. Well feathered young were observed in the latter nest on August 6.

35. **Toxostoma rufum.** BROWN THRASHER.—Although fully as abundant in the county as the Mockingbird, the Brown Thrasher is more retiring in habits, showing a preference for secluded localities, and in Liberty County at least, rarely ventures to nest in the immediate vicinity of dwellings. The birds choose as their home environment, brush heaps, thorn thickets and grapevine tangles. They begin nest building slightly earlier than the Mockingbird, as I noted young about one week old on April 18. Eight nests were noted, in widely separated localities. Seven contained four eggs each, and one held three young about one week old, the latter nest being the one noted on April 18, and is my earliest breeding record for the county. My latest date is June 20, when a nest containing four eggs was found. In construction, and materials used, these nests were very similar to those of the Mockingbird, being, however, slightly bulkier and containing more twigs than the nest of the latter species. Heights varied from two to seven feet, averaging four feet.

36. **Thryothorus ludovicianus ludovicianus.** CAROLINA WREN.—This species is present everywhere in the county, nesting in great abundance. They are, however, very secretive in nesting habits, and I am able to record the finding of but three nests. These were built in a variety of situations, the first one being noted on April 15. It was placed four feet from the ground in a natural cavity of an oak stub, and contained five fresh eggs. This nest was constructed entirely of dead pine needles with the exception of the lining, which consisted of a few dried strands of Spanish moss. Another nest, noted May 12, was placed in a depression between two converging roots at the base of a large cypress growing in the heart of a dense swamp. This nest also contained five eggs. The third nest was built in a burnt out "boxing" of a live pine in a heavily timbered district on St. Catherine's island, and contained an incomplete set of three eggs on June 7, evidently a second laying. The two latter nests were bulky affairs, composed of moss, hay, grasses and leaves, lined with hair and feathers.

The Carolina Wren is an early breeder in Liberty County. Five seems to constitute the usual complement of eggs of the first laying, the second consisting usually of four.

37. **Telmatodytes palustris griseus.** WORTHINGTON'S MARSH WREN.—The Marsh Wren is ever associated in my mind with wide stretches of marsh and early morning excursions on numerous rivers and

creeks that thread their way alternately between small heavily wooded hammocks and beautiful islands all covered with undergrowth almost tropical in aspect, and bordered by luxuriant growths of tall marsh grass swaying in the gentle summer breeze. In such an environment the wiry trill of the Marsh Wren is the first bird voice to be heard at the morning awakening. This species breeds numerously in the county, being confined exclusively to salt water marshes. On May 9, among the marshes bordering the islands and hammocks north of St. Catherine's island, I examined many nests containing from one to five eggs. The latter number constitutes the full complement. The nests were globular in shape, with the entrance on the side, and were composed of the blades and stems of the marsh grass. They were placed in the tall grass well out of reach of high tides. This bird constructs many nests which apparently are never occupied, although I am not aware that anyone has carried on observations in one of their colonies sufficiently continuous to prove conclusively that these nests are not used in some way.

A THREE MONTHS' LIST OF THE BIRDS OF PINELLAS COUNTY, FLORIDA.

BY MAJOR CLIFFORD H. PANGBURN, A.R.C.

THE observations upon which the following list is based were made during a period extending from January 22 to April 29, 1918. The region covered included the greater part of Pinellas County, Florida, although most of the time was spent in the southern part of the county around the city of St. Petersburg, and along the keys which separate the Gulf of Mexico from the mainland.

Pinellas County is in the form of a peninsula about seven or eight miles wide at the widest point, and tapering to a blunt end at the southern end. Along the east side is Tampa Bay, on which is located St. Petersburg, a city of about 15,000, which has nearly double that population in the winter. Tampa is about fifty miles distant, up and across the bay.

On the west side of the county lies Boca Ceiga Bay, from which there are a few passes opening into the Gulf of Mexico between the keys. These are for the most part very narrow. The keys them-

selves are with a few exceptions only a few hundred yards in width. In some places there are thick groves of good sized palmettos but for the most part the vegetation is thin and scarce. There are a good many very shallow bayous on the inner side of the keys.

At the center of the Pinellas Peninsula and about two miles from its southern point is Salt Lake. As a matter of fact this lake is fresh in spite of its name. It has an area of perhaps a square mile. At three corners there are good sized marshes of tall grass and cat-tails, and at many places the banks are wet and soggy turf. It is an ideal place for many species of water birds, and hundreds of them are there. Unfortunately there seems to be absolutely no attempt made to enforce game laws either State or Federal. I visited Salt Lake many times and on every occasion discovered one or more persons shooting at the wildfowl there.

The mainland of the county consists almost entirely of pine barrens considerably thinned out for a long distance from the city by real estate developments. Indeed I often found that I could stroll through the heart of some good ornithological hunting ground on the cement sidewalks of some optimistic real estate speculator.

All around the coast line of the county are numerous bayous, which are usually very shallow and make excellent feeding places for wading birds.

This list makes no pretense of being more than an outline upon which to start a complete record of the bird life of this interesting region. In the first place it covers only a little over three months, and in addition I was in Florida convalescing from an operation following service in France. During the first part of my stay I was much limited in getting about, and at no time could I take very long walks or cover as much of the country as I should have liked.

The wealth of bird life, especially of various sorts of water birds, and the ease with which many of them can be observed makes Pinellas County a place of never ending interest to the ornithologist. The perfect climate of the winter heightens the charm.

1. **Colymbus auritus.** HORNE GREBE.—Rather common during February, but showing great variation as to abundance. On some days forty to sixty could be seen near the docks, while on other days none could be found. Seen only on Tampa and Boca Ceiga bays, never on the Gulf. Some specimens seen on February 18 were almost in full plumage.

2. **Podilymbus podiceps.** PIED-BILLED GREBE.— Abundant at all times on Salt Lake, which as mentioned above is actually fresh. These Grebes were in company with Coots, but not nearly so numerous. Present but less abundant as late as April 20.

3. **Gavia immer.** LOON.— Present in small numbers on the bays. On February 13 I watched two for some time within fifty feet of a dock from which a number of people were fishing.

4. **Gavia stellata.** RED-THROATED LOON.— Two seen on January 30 is my only record of this species.

5. **Larus argentatus.** HERRING GULL.— Herring Gulls were fairly common at all times although outnumbered by the two following species. Nearly all of the birds seen were immature.

6. **Larus delawarensis.** RING-BILLED GULL.— These gulls became very common from February 11 until late April, although prior to that time I did not see any. This may have been because I did not get to Boca Ceiga bay, where they were most abundant until that date. Fairly common along the Gulf beaches.

7. **Larus atricilla.** LAUGHING GULL.— Hundreds of Laughing Gulls were always present, and every sort of transitional stage of plumage could be observed. They are easily attracted by throwing minnows into the water. The fishermen call them Crying Gulls, a name perhaps fully as appropriate as the official title. The Laughing Gull is a persistent tormentor of the Brown Pelican. While the latter is squeezing the water from its pouch after catching a fish the Gull will calmly perch on the Pelican's head, and attempt to steal the fish when it is tossed prior to swallowing. The Pelicans appear to ignore totally the presence of the Gull and I have never seen one lose a fish. After watching hundreds of unsuccessful attempts by the Laughing Gulls to steal a meal in this way I came to the conclusion that they must be an extremely optimistic species.

8. **Larus franklini.** FRANKLIN'S GULL.— I saw one Franklin's Gull on February 26. It was in company with several other species at the mouth of a sewer where I watched it for half an hour or more with an eight diameter glass, often being within twenty-five feet. There could be no doubt of the identification. This is I believe a rare Gull in Florida.

9. **Larus philadelphia.** BONAPARTE'S GULL.— A few Bonaparte's Gulls were observed on a half-dozen different dates ranging from January 28 to April 29. They were always in company with Laughing Gulls. Apparently a regular but scarce winter visitor on this portion of the West Coast.

10. **Sterna caspia.** CASPIAN TERN.— This magnificent Tern was about as common as the equally handsome species which follows, both being abundant. They were seen over both bays, the Gulf and the fresh water lake. They are also fond of sitting for hours on sand bars with other water birds. At such times they are shy and are the first to take flight. They have a considerable variety of calls and whistles.

11. **Sterna maxima.** ROYAL TERN.— What has been said about

the foregoing species applies to this one. The two are usually found in company, but with a little practice it is easy to distinguish them from one another. Their beautiful flight and striking appearance make them most attractive.

12. *Sterna sandvicensis aculeiflvida*. CABOT'S TERN.— I saw a half dozen Cabot's Terns on February 14, March 25 and March 26. They were all on the Gulf side at Pass-a-Grille Key. They are probably more abundant than my records would indicate, but do not frequent the land-locked bays to so great an extent as do other Terns.

13. *Sterna hirundo*. COMMON TERN.— A few were seen during the last week of January and the first ten days of February. After that they seemed to disappear. Some of the birds were probably Forster's Terns but in winter plumage this is a distinction that is difficult to make.

14. *Sterna antillarum*. LEAST TERN.— One was seen on February 11, and I saw two more on April 26. These are my only records.

15. *Rynchops nigra*. BLACK SKIMMER.— Skimmers were among the most abundant of the water birds about St. Petersburg, but varied greatly in their abundance from day to day. Flocks of from a hundred to a thousand could be seen resting on sand bars. They were found for the most part on the bays. They are locally known as Scissorbills and Shearwaters.

16. *Phalacrocorax auritus floridanus*. FLORIDA CORMORANT.— Whether all of the Cormorants observed were of this subspecies I cannot say, although theoretically I suppose that they were. In any case those which were breeding on Bird Key must have been floridanus. The Cormorants are known locally and to the tourists as "nigger ducks." They are probably the most abundant water bird of Pinellas county, although not as conspicuous as the Brown Pelican. On February 11 at Pass-a-Grille I saw a flock of Florida Cormorants which numbered easily twelve thousand. The flock was apparently following some vast school of fish, and swung about in the air and water for two hours or more before passing out of sight. This was in the Gulf of Mexico. At one time the flock came so near the beach that I could hear the roar of the wings. About half of the birds were in the water and half in the air, and they kept constantly changing, so that there was a tremendous amount of activity. A few Pelicans, Mergansers and Gulls were mingled in the flock. On a visit to Bird Key, April 3, I found the Cormorants nesting in large numbers. The nests were in the most inaccessible portions of the mangroves, and were further protected by the violent disgorging of half digested fish by their tenants.

17. *Pelecanus erythrorhynchos*. WHITE PELICAN.— I saw only two White Pelicans. One was flying over Salt Lake on February 7 and the other was at Bird Key on February 18. The fishermen assure me that a few are seen every winter on Boca Ceiga bay.

18. *Pelecanus occidentalis*. BROWN PELICAN.— Brown Pelicans are the chief show bird of St. Petersburg. They are the pets of the tour-

ists, who take endless delight in their extraordinary prowess as living fish nets. During the past winter fishermen have been attempting to get permission to kill the Pelicans on the ground that they destroy valuable fish. The absurdity of this assertion is apparent to anyone who has watched the birds. Hundreds of Brown Pelicans nest on Bird Key, the nests being placed at from six to twenty-five feet in the mangroves. I visited the key on April 3 at which time the young were just hatching.

19. *Fregata aquila*. MAN-O'-WAR-BIRD.—I first saw a Man-o'-war-bird on the Gulf side on April 4. From April 16 to 29, when I left, I saw from one to four of them every day. The extraordinary grace with which they sail in the heaviest wind or the most complete calm makes them conspicuous in spite of their comparatively small numbers.

20. *Mergus serrator*. RED-BREASTED MERGANSER.—Flocks of two or three to sixteen or eighteen were frequently observed. They were very tame, frequently coming directly under the docks. Full plumaged males were seldom seen.

21. *Mergus americanus*. MERGANSER.—Three adult males were seen, the last on March 25.

22. *Anas platyrhynchos*. MALLARD.—Only one Mallard was seen, February 11.

23. *Anas fulvigula fulvigula*.—I saw a flock of about a dozen Florida Ducks in the Manatee river across the mouth of Tampa bay from the southern tip of Pinellas county, but I have no doubt that they occur on the Pinellas side of the bay as well. The birds were seen from a steamer on January 30.

24. *Chaulelasmus streperus*. GADWALL.—I got quite close to a flock of eight Gadwalls at Salt Lake on March 4th. Although this was the only time that I saw them it is probable that they had been there for some time among the hundreds of Scaups.

25. *Querquedula discors*. BLUE-WINGED TEAL.—I did not see any Teal but Howard Hall, of Indianapolis, Ind., observed some Blue-winged Teal at Clearwater in January.

26. *Marila valisineria*. CANVAS-BACK.—Fairly abundant at Salt Lake until the middle of March. First seen February 7. The extremely cold winter in the North may have been responsible for their appearance so far South.

27. *Marila marila*. SCAUP DUCK.—Positively identified only once, March 4.

28. *Marila affinis*. LESSER SCAUP DUCK.—Extremely abundant on both salt and fresh water. On Salt Lake they are constantly shot at by local hunters who totally disregard all game laws, but they remain there by hundreds if not thousands. Abundant as late as April 20.

29. *Marila collaris*. RING-NECKED DUCK.—One seen on Boca Ceiga bay on February 14.

30. *Erismatura jamaicensis*. RUDDY DUCK.—A good sized flock

of Ruddy Ducks was on Salt Lake on February 7 and 8 but I did not see them at any other time.

31. **Guara alba.** WHITE IBIS.—The White Ibis was inconspicuous until April, being seen only on Bird Key, where I found two on February 18. Throughout April they were very abundant, often being seen wheeling about over the city. They frequently fly in wedge shaped flocks. I have seen as many as five hundred circling about together. They are probably the largest breeder at Bird Key.

32. **Mycteria americana.** WOOD IBIS.—I saw only one Wood Ibis. It was at Salt Lake on April 20. It sailed about overhead for some time.

33. **Ardea herodias herodias.** GREAT BLUE HERON.—So far as I could tell without collecting any specimens Great Blue Herons and Ward's Herons seemed to be about equally abundant. Large numbers of both were present. During the last week of March birds were building nests on Bird Key. These were, I suppose, *A. h. wardi*.

34. **Herodias egretta.** EGRET.—It was a pleasant surprise to find the Egret quite well established. I have seen as many as fifty together. Nesting preparations were started at Bird Key at the time of my last visit April 4.

35. **Egretta candidissima candidissima.** SNOWY EGRET.—Not nearly as abundant as the preceding species during the latter part of my stay but commoner during February. I did not see any Snowy Egrets at Bird Key, although told that they nest there. A number in full breeding plumage were noted.

36. **Hydranassa tricolor ruficollis.** LOUISIANA HERON.—Common at every pool and bayou and along the shore. Usually quite tame. Breed on Bird Key.

37. **Florida cærulea.** LITTLE BLUE HERON.—Very abundant, but seen mostly on the mud flats on the bay side of the Gulf keys. A few in the white plumage seen. Breed on Bird Key.

38. **Nyctanassa violacea.** YELLOW-CROWNED NIGHT HERON.—Only one seen.

39. **Rallus elegans.** KING RAIL.—One apparently spent several weeks in a brackish bog not a hundred feet in diameter, and very near one of the city streets. It could be seen frequently and heard oftener. This species also occurred at Salt Lake.

40. **Gallinula galeata.** FLORIDA GALLINULE.—The marshes about Salt Lake were full of Florida Gallinules, and they could be seen there at any time. They were probably breeding.

41. **Fulica americana.** COOT.—Coots were very abundant on Salt Lake. Flocks of three or four hundred were common, and parts of the marshes were almost crowded with them. Some were there at least as late as April 20.

42. **Gallinago delicata.** WILSON'S SNIPE.—Two Wilson's Snipe were present in the same bog mentioned above as the home of the King Rail from January 26 to March 6. These were the only ones I saw.

43. *Macrorhamphus griseus scolopaceus*. LONG-BILLED DOWITCHER.— I suppose that the Dowitchers observed were of this subspecies. They were common on the mud flats and beaches, although none were seen after April 1. They were usually in flocks of about a dozen.

44. *Pisobia minutilla*. LEAST SANDPIPER.— Extremely common, occurring with the Semipalmated and Western Sandpipers in flocks of hundreds on beaches and mud flats.

45. *Pelidna alpina sakhalina*. RED-BACKED SANDPIPER.— Did not appear to be common but a few could usually be found in any large group of shore birds. In winter plumage they are so inconspicuous that they were doubtless passed by at times.

46. *Ereunetes pusillus*. SEMIPALMATED SANDPIPER.— Common on all the beaches and flats.

47. *Ereunetes mauri*. WESTERN SANDPIPER.— Apparently not very common, but this is perhaps due to the close resemblance to the preceding species.

48. *Totanus melanoleucus*. GREATER YELLOW-LEGS.— Two were seen on February 15.

49. *Catoptrophorus semipalmatus inornatus*. WESTERN WILLET.— While I did not collect any Willets I assumed those seen to be of this subspecies, as the Gulf Coast of Florida is a part of their regular winter range. Willets were abundant during all of my stay and were most commonly seen in groups of four to six. On February 16 I saw a flock of at least a thousand on a sand bar in Boca Ceiga bay. I often heard them crying as they flew about at night, especially when there was a good moon.

50. *Actitis macularia*. SPOTTED SANDPIPER.— This species was not as abundant as would be expected. I saw it only three or four times.

51. *Squatarola squatarola*. BLACK-BELLIED PLOVER.— Quite common up to April 16. Seen mostly in small flocks on the Gulf beaches.

52. *Oxyechus vociferus*. KILLDEER.— While it is true that the Killdeer is not the most abundant shore bird of Pinellas County it is easily the most conspicuous. Small numbers are present everywhere along the beaches and at many places inland. Like the Willet they are very active at night. Was very rare after the first of April.

53. *Aegialitis semipalmata*. SEMIPALMATED PLOVER.— This species was regularly present in fair sized flocks on all of the beaches. It was usually in company with other Plover and the smaller Sandpipers.

54. *Aegialitis meloda*. PIPING PLOVER.— Not so abundant as the preceding and seen only on the Gulf beaches of the outer keys, where they could always be found in small flocks.

55. *Aegialitis nivosa*. SNOWY PLOVER.— The Snowy Plover is, I believe, a very rare bird in Florida. I saw only one which was on a sand bar south of Pass-a-Grille Key on March 25. I was able to examine it for a long time with an eight diameter binocular at a distance of less than fifty feet. There could be no question of the identification. It was in company with a small flock of Piping Plover.

56. *Ochthodromus wilsonius*. WILSON'S PLOVER.—A common species seen with almost every flock of shore birds. Last seen on March 25.

57. *Arenaria interpes morinella*. RUDDY TURNSTONE.—One of the most abundant of the shore birds, being found in about equal abundance along the surf and on the tidal flats.

58. *Colinus virginianus floridanus*. FLORIDA BOB-WHITE.—Bob-white did not appear to be very common, but were sometimes seen along the edges of the roads. I assume that they were of this subspecies.

59. *Zenaidura macroura carolinensis*. MOURNING DOVE.—A common bird in the central part of the county, but not often seen near the water.

60. *Zenaida zenaida*. ZENaida DOVE.—I saw two Zenaida Doves on Pass-a-Grille Key on February 11. This is the only record I have of the species.

61. *Chamepelia passerina terrestris*. GROUND DOVE.—Ground Doves are common throughout Pinellas County both on the mainland and the keys. In St. Petersburg they are often seen about the door yards. They are locally called Sand Doves, perhaps because all the ground is sand.

62. *Cathartes aura septentrionalis*. TURKEY VULTURE.—See following species.

63. *Catharista urubu*. BLACK VULTURE.—Both species of Vultures are of course extremely abundant. There is not a moment of the day when one to a hundred cannot be seen. The two species seem to be about equally common.

64. *Circus hudsonius*. MARSH HAWK.—A Marsh Hawk could always be seen about Salt Lake and also along the keys, but there were probably not many individuals present.

65. *Accipiter velox*. SHARP-SHINNED HAWK.—I saw one Sharp-shinned Hawk in the Pine woods on February 20.

66. *Haliaeetus leucocephalus leucocephalus*. BALD EAGLE.—Quite common all around the coast line of the county. I knew of six nests. The first one which I found had two young which looked to be about half grown on February 13.

67. *Falco sparverius sparverius*. SPARROW HAWK.—Sparrow Hawks were abundant everywhere on mainland and keys.

68. *Pandion haliaetus carolinensis*. OSPREY.—Frequently seen about the bays and over the Gulf.

69. *Aluco pratincola*. BARN OWL.—I flushed a Barn Owl among some thick pines north of the city on February 27. It lingered about the locality, where it probably spent the greater part of its time.

70. *Asio flammeus*. SHORT-EARED OWL.—The only Short-eared Owl which I saw I flushed from among the grass tufts at the lower end of Pass-a-Grille Key on February 11.

71. *Otus asio floridanus*. FLORIDA SCREECH OWL.—I frequently heard Screech Owls and knew of one hollow tree in which one roosted. Because of the locality I assumed the Owls to be floridanus.

72. *Coccyzus americanus americanus*. YELLOW-BILLED CUCKOO.—One Yellow-billed Cuckoo was seen on April 26 but it may have arrived considerably before that date as I had not previously been in a suitable region for this bird.

73. *Ceryle alcyon alcyon*. BELTED KINGFISHER.—Several Kingfishers could be seen in the course of a day along the shore, but though regular they were not abundant.

74. *Dryobates pubescens pubescens*. SOUTHERN DOWNY WOODPECKER.—While I encountered Downy Woodpeckers occasionally they did not appear to be common at any time.

75. *Dryobates borealis*. RED-COCKADED WOODPECKER.—Evidence in the form of old nests led me to believe that all Woodpeckers have recently been more common in Pinellas county than I found them. The Red-cockaded Woodpecker could be seen regularly in a few localities but was entirely missing from places equally favorable.

76. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.—Evidently a scarce bird at least at the season covered. I saw only two, March 21 and April 26.

77. *Centurus carolinus*. RED-BELLIED WOODPECKER.—This species with the exception of the following was the most abundant and evenly distributed Woodpecker. They were quite frequent on the keys where they nest in the trunks of the larger palmettos.

78. *Colaptes auratus auratus*. FLICKER.—The Flicker was common throughout the county both in the city and the pine woods. I saw them only rarely on the keys.

79. *Antrostomus carolinensis*. CHUCK-WILL'S-WIDOW.—Rather common from March 13 on. One or two could usually be heard singing at any place around the edge of the city in the evening.

80. *Chordeiles virginianus chapmani*. FLORIDA NIGHTHAWK.—Unless *C. V. virginianus* occurs on this part of the West Coast during migration the Nighthawks I saw were of this subspecies. They did not appear until April 19 and were abundant after that date.

81. *Chaetura pelagica*. CHIMNEY SWIFT.—Every day from March 24 to the end of my stay these birds were increasingly abundant. None seen before that date.

82. *Archilochus colubris*. RUBY-THROATED HUMMINGBIRD.—First seen on February 21 on Long Key. Only two others were seen in spite of the large quantities of flowering plants and trees.

83. *Tyrannus tyrannus*. KINGBIRD.—Kingbirds appeared first on April 28, the day before my departure.

84. *Myiarchus crinitus*. CRESTED FLYCATCHER.—Common in the pine woods and along the city streets after April 20.

85. *Sayornis phoebe*. PHOEBE.—I saw this species throughout my stay but not in large numbers.

86. *Cyanocitta cristata florincola*. FLORIDA BLUE JAY.—The Blue Jay ranks next to the Mockingbird in point of abundance among the

land birds. They are everywhere and in the city nest in trees along the streets and in the yards. There is a noticeable difference in the notes of the Florida birds and those found in the North.

87. *Corvus ossifragus*. FISH CROW.—All of the Crows which I observed were small in size and had the characteristic call of the Fish Crow. It would seem that *C. b. pascuus* (Florida Crow) must occur in the county but I did not see any that I could certainly identify as being of that subspecies.

88. *Agelaius phœniceus floridanus*. FLORIDA RED-WING.—Abundant on both wet and dry keys and in every bog hole and swamp.

89. *Sturnella magna argutula*. SOUTHERN MEADOWLARK.—I found Meadowlarks abundant everywhere except in the thicker pine woods. There is a decided difference in the song from that of *S. m. magna*. The birds were also much tamer than any Meadowlarks I had previously encountered.

90. *Quiscalus quiscula aglæus*. FLORIDA GRACKLE.—A common bird about the lawns of St. Petersburg. Not as abundant as the following species, nor so often seen about the water front or the marshes.

91. *Megaquiscalus major major*. BOAT-TAILED GRACKLE.—Common all along the water front and in the marshes around Salt Lake. A favorite perching place was on the mast head of any convenient boat in the yacht basin.

92. *Astragalinus tristis tristis*. GOLDFINCH.—Two Goldfinches seen on Pass-a-Grille Key on February 11 are my only record of this species.

93. *Poœcetes gramineus gramineus*. VESPER SPARROW.—I saw two Vesper Sparrows near Salt Lake on February 27. No other record.

94. *Passerculus sandwichensis savanna*. SAVANNAH SPARROW.—A small number of Savannah Sparrows were near Salt Lake during February, but I did not find them anywhere else.

95. *Passerherbulus henslowi henslowi*. HENSLOW'S SPARROW.—On February 1 and for a few days thereafter two Henslow's Sparrows were present on a scrubby sand field euphemistically known as Bay View Park. I did not see any elsewhere.

96. *Passerherbulus maritimus peninsulæ*. SCOTT'S SEASIDE SPARROW.—All of the region which I visited being south of Tarpon Springs I suppose that the Seaside Sparrows, which were fairly common, were of this subspecies, although some may have been *P. m. fisheri*. They were decidedly different in appearance from the Seaside Sparrows with which I had been familiar in the North. *P. m. macgillivraii* may also have been among those present. This was a case where only a gun could give a strictly accurate answer.

97. *Spizella passerina passerina*. CHIPPING SPARROW.—One bird seen on February 19 is my only record.

98. *Spizella pusilla pusilla*. FIELD SPARROW.—A flock of half a dozen Field Sparrows seen near Salt Lake on February 7 is my only record of this species.

99. *Peucaea aestivalis aestivalis*. PINE-WOODS SPARROW.—There was one pine grove north of St. Petersburg where the Pine-woods Sparrow could always be found, but on the whole it did not appear to be as common as I had expected.

100. *Melospiza melodia melodia*. SONG SPARROW.—This region seemed a little too far south for the Song Sparrow, and two seen on February 13 are the only ones noted.

101. *Melospiza georgiana*. SWAMP SPARROW.—Present in small numbers in almost all suitable localities, particularly in the swamps about Salt Lake.

102. *Pipilo erythrophthalmus erythrophthalmus*. TOWHEE.—Towhees were plentiful in suitable country being most abundant where the Palmetto scrub was thick. I had a number of opportunities to examine birds at very close range and did not see any that could be considered *P. e. alleni*.

103. *Cardinalis cardinalis floridanus*. FLORIDA CARDINAL.—One of the commonest land birds both in the city yards and the country.

104. *Zamelodia ludoviciana*. ROSE-BREASTED GROSBEEK.—A few migratory birds, all males, were seen on April 28. This was probably the day of their arrival although it seems very late.

105. *Passerina cyanea*. INDIGO BUNTING.—Indigo Buntings were common in a few restricted localities April 26 to 29, when I left the region.

106. *Passerina ciris*. PAINTED BUNTING.—A brightly plumaged male was seen by Mr. Howard Hall in February. I have not the exact date.

107. *Piranga erythromelas*. SCARLET TANAGER.—This species arrived from the tropics April 28.

108. *Progne subis subis*. PURPLE MARTIN.—From February 28 to the time of my departure Purple Martins were constantly seen about the city of St. Petersburg and the surrounding country. There are hardly any martin houses, the result being that large numbers of them nest under cornices of buildings and wharves.

109. *Hirundo erythrogastra*. BARN SWALLOW.—I saw the first Barn Swallow on April 19, after which it was an abundant species.

110. *Iridoprocne bicolor*. TREE SWALLOW.—Noted at Charleston, S. C., on January 21, but not seen at St. Petersburg until February 7. Regularly observed after that date.

111. *Riparia riparia*. BANK SWALLOW.—One Bank Swallow was seen with other swallows about a small pond in St. Petersburg on April 10.

112. *Lanius ludovicianus ludovicianus*. LOGGERHEAD SHRIKE.—This species probably stands third in point of abundance among land birds throughout Pinellas county, being exceeded only by the Florida Blue Jay and the Mockingbird. They live about close to the houses and seem to be quite tame. For the most part their food consists of insects. I saw only one bird with a mouse, and none with small birds as prey. Young fully feathered and flying were seen with the parent birds during the last week of March.

113. *Lanivireo solitarius solitarius*. BLUE-HEADED VIREO.—Seen only twice, January 26 in a small park in St. Petersburg and on Pine Key on March 25.

114. *Vermivora celata celata*. ORANGE-CROWNED WARBLER.—Seen in the pine woods near Salt Lake on February 7, a day when warblers were more abundant than any other during my stay. This is my only record.

115. *Compsothlypis americana americana*. PARULA WARBLER.—Migratory birds appeared on April 14, after which date they were frequently seen.

116. *Dendroica coronata*. MYRTLE WARBLER.—One of the most abundant birds in the trees of the city streets and yards from my arrival January 22 to the end of March after which they were less abundant.

117. *Dendroica dominica dominica*. YELLOW-THROATED WARBLER.—While not abundant these handsome Warblers could be found regularly in the denser palmetto groves on the keys, and to a lesser extent in the pine woods on the mainland.

118. *Dendroica vigosii*. PINE WARBLER.—I first saw the Pine Warbler on February 7. It was at no time common, and could be found in only a few very restricted localities.

119. *Dendroica palmarum hypochrysea*. YELLOW PALM WARBLER.—Abundant everywhere up to March 4. After that date they rapidly diminished in numbers. It is possible that *D. p. palmarum* was the form most abundant as I have had no experience in differentiating between the two in the field.

120. *Dendroica discolor*. PRAIRIE WARBLER.—The song of the Prairie Warbler could be constantly heard about the mangrove keys and among the mangroves on the shores of the shallow bayous, beginning March 6. Prior to that I did hear or see the birds. During the first two weeks of April they were abundant in the trees along the city streets.

121. *Seiurus aurocapillus*. OVEN-BIRD.—Seen at Salt Lake on February 7 and on Pine Key on March 25.

122. *Seiurus motacilla*. LOUISIANA WATER THRUSH.—Seen on April 26 which was probably some time after its arrival.

123. *Geothlypis trichas ignota*. FLORIDA YELLOW-THROAT.—A moderately common species in two or three places, but never seen elsewhere. Heard in song on February 15.

124. *Anthus rubescens*. PIPIT.—One Pipit was seen on the beach at St. Petersburg on March 2, and another on a small sand bar in the harbor on March 6. The latter was walking about among a flock of Plover, Black-skimmers and Caspian Terns.

125. *Mimus polyglottos polyglottos*. MOCKINGBIRD.—The Mockingbird is the most conspicuous, most abundant and best known land bird in the county. Every yard has one or more nests, and the birds can be seen and heard all day long everywhere. They also sing most of the night in smaller numbers, especially when the moon is shining.

126. *Dumetella carolinensis*. CATBIRD.—I saw only one Catbird during my entire stay. This was at Salt Lake.
127. *Toxostoma rufum*. BROWN THRASHER.—The Brown Thrasher was nearly as uncommon as the Catbird except in one spot where two or three individuals could usually be found. Perhaps the extreme abundance of the Mockingbird crowds the other Mimidæ.
128. *Thryothorus ludovicianus miamensis*.—FLORIDA WREN.—This form of the Carolina Wren was regularly found about Salt Lake and a few bayous, but I did not find it elsewhere.
129. *Thryomanes bewicki bewicki*. BEWICK'S WREN.—On February 27 I saw a Bewick's Wren north of the city. I was unable to visit the place again, and did not find the species elsewhere.
130. *Troglodytes aedon aedon*. HOUSE WREN.—Only one record. Seen near Salt Lake February 19.
131. *Regulus calendula calendula*. RUBY-CROWNED KINGLET.—A wave of Ruby-crowned Kinglets together with the following species appeared on February 5 and lasted until the 18th after which none were seen. During that time they were everywhere, being especially abundant in the camphor trees along the city streets.
132. *Polioptila cærulea cærulea*. BLUE-GRAY GNATCATCHER.—Came and went with the Ruby-crowned Kinglets. Extremely common during the two weeks mentioned under the preceding species.
133. *Hylocichla guttata pallasii*. HERMIT THRUSH.—I saw several Hermit Thrushes at Salt Lake on February 7. I have no other record.
134. *Planesticus migratorius migratorius*. ROBIN.—Robins were rather scarce in Pinellas county. I saw them but rarely and then usually near or about the so-called "muck lots," where because of the black soil they probably found worms. The universal white sand discourages worm hunting elsewhere.
135. *Sialia sialis sialis*. BLUEBIRD.—While not particularly abundant Bluebirds could be found in many sections in fair numbers.

NOTES ON NORTH AMERICAN BIRDS.

VIII.

BY HARRY C. OBERHOLSER.

In the present installment¹ of these notes on North American birds there are discussed forms of three species belonging respectively to the families *Motacillidæ*, *Sylviidæ*, and *Troglodytidae*.

***Anthus spinoletta rubescens* (Tunstall).**

In a comparatively recent publication² Dr. Ernst Hartert treated the American Pipit as a subspecies of *Anthus spinoletta*.³ Only a superficial examination is required to demonstrate that this is the correct view of its relationship. It is distinguishable from *Anthus spinoletta spinoletta* by its smaller size and by the more deeply ochraceous or cinnamon rufous suffusion on the under surface. So far as measurements are concerned, the difference between these two forms is merely average, since the extremes considerably overlap. Both these birds have a wide range of individual variation in color which manifests itself strikingly in two extreme color phases, one gray, the other deep ochraceous, between which there are all sorts of intermediates. There is also much difference in the amount of streaking on the lower parts, some specimens being almost immaculate, while others are very heavily marked on the breast and sides. This great individual variation so completely and widely overlaps the distinctions between *Anthus rubescens* and *Anthus spinoletta* that only on average characters are they separable even as subspecies. It is, therefore, perfectly evident that the former should stand as *Anthus spinoletta rubescens* (Tunstall).

¹ For previous papers in this series, cf. "The Auk," XXXIV, April, 1917, pp. 191-196; XXXIV, July, 1917, pp. 321-329; XXXIV, October, 1917, pp. 465-470; XXXV, January, 1918, pp. 62-65; XXXV, April, 1918, pp. 185-187; XXXV, October, 1918, pp. 463-467; XXXVI, January, 1919, pp. 81-85.

² Vögel paläarkt. Fauna, Heft III, June, 1905, p. 282.

³ *Alauda Spinoletta* Linnaeus, Syst. Nat., ed. 10, I, 1758, p. 166 (Italy).

***Acanthopneuste borealis kennicotti* (Baird).**

The Kennicott Willow Warbler, *Acanthopneuste borealis kennicotti*, originally described by Professor Baird¹ and subsequently revived by Mr. Ridgway,² has for some unaccountable reason not been currently recognized. It is undoubtedly a good subspecies, differing from *Acanthopneuste borealis borealis* in its much smaller size, particularly of wing, tail, and bill, and in its somewhat less yellowish, more grayish upper parts, particularly at the spring and summer seasons. It should, therefore, be restored to a place in our North American list. It breeds in middle and western Alaska and migrates to parts of southeastern Asia.

***Salpinctes obsoletus guadeloupensis* Ridgway.**

The Guadalupe Rock Wren, *Salpinctes guadeloupensis* Ridgway, was originally described as a subspecies of *Salpinctes obsoletus*, but is commonly considered a distinct species. Mr. Ridgway has, however, within recent years³ again reduced it to a subspecies of *Salpinctes obsoletus*, though this seems to have been ignored by present day writers. The study of a series of some 190 specimens of *Salpinctes obsoletus* and 25 of *Salpinctes guadeloupensis* unquestionably substantiates Mr. Ridgway's opinion in regard to their subspecific relationship. All the measurements of these two birds fully inosculate, as may be readily seen from the detailed figures that Mr. Ridgway has given.⁴ In color the two birds look very different at first sight, but there not infrequently occur examples that completely bridge over the differences in coloration. In fact, the most deeply colored specimens of *Salpinctes obsoletus obsoletus* are really darker than the lightest examples of *Salpinctes guadeloupensis*. Moreover, *Salpinctes obsoletus neglectus*, which is an undoubted subspecies of *Salpinctes obsoletus*, is, in the shade of the upper surface,

¹ *Phyllopneuste kennicotti* Baird, Trans. Chicago Acad. Sci., I, 1869, p. 313, pl. 30, fig. 2. (St. Michael, Alaska).

² Bull. U. S. Nat. Mus., No. 50, part III, 1904, p. 696.

³ Bull. U. S. Nat. Mus., No. 50, part III, 1904, p. 650.

⁴ Bull. U. S. Nat. Mus., No. 50, part III, 1904, pp. 645, 646, 650.

almost the same as *Salpinctes guadeloupensis*. Furthermore, in testing Mr. W. De W. Miller's criterion of distinctness for *Salpinctes guadeloupensis*¹ the ratio of wing-length to exposed culmen we get the following results in our series; *Salpinctes obsoletus obsoletus*, 3.4-4.2; *Salpinctes obsoletus neglectus*, 3.3-3.7; *Salpinctes guadeloupensis*, 3.0-3.5. It is thus evident that even this character inoscules. The Guadalupe Rock Wren and its subspecies should therefore stand as

***Salpinctus obsoletus guadeloupensis* Ridgway.**

***Salpinctus obsoletus proximus* Swarth.**

THE GEOGRAPHIC RACES OF *HEDYMELES MELANOCEPHALUS* SWAINSON.

BY HARRY C. OBERHOLSER.

THAT there are two subspecies of *Hedymeles*² *melanocephalus* is pretty generally recognized. Determination of the 245 specimens of this species in the United States National Museum, including the Biological Survey Collection, has, however, revealed the fact that the names and geographic ranges of these forms seem to be in need of readjustment.

The results of this study appear worth placing on record, which we shall endeavor to do in the following pages.

***Hedymeles melanocephalus melanocephalus* Swainson.**

Guiraca melanocephala SWAINSON, Philos. Mag., New Ser., I, June, 1827, p. 438 (Temascaltepec, Mexico, Mexico).

Fringilla epopæa LICHTENSTEIN, Preis-Verz. Säug., Vögel, Amphib., Fische, und Krebse Mex., 1830, p. 2 (Mexico).

¹ The Auk, XXXVI, No. 2, April, 1919, p. 295.

² For the use of the generic name *Hedymeles* instead of *Zamelodia*, cf. Oberholser, 'The Auk,' XXXVI, No. 1, January, 1919, p. 115.

Fringilla xanthomachalis WAGLER, Isis, 1831, col. 525 (Mexico).

Fringilla maculata AUDUBON, Birds Amer., folio ed., IV, 1837, pl. 373, figs. 2, 3, 4 (Columbia River).

Guiraca tricolor LESSON, Rev. Zool., II, April, 1839, p. 102 (Mexico).

Pitylus guttatus LESSON, Rev. Zool., II, April, 1839, p. 102 (Mexico).

[*Hedymeles melanocephalus*] var. *capitalis* BAIRD, in Baird, Brewer, & Ridgway's Hist. North Amer. Birds, II, 1874, p. 70 (Columbia River, Oregon).

Zamelodia melanocephala microrhyncha GRINNELL, Condor, II, No. 6, Nov. 16, 1900, p. 128 (Buckhorn Canyon, Sierra San Gabriel, Los Angeles Co., California).

Chars. subsp.—Size small; particularly of wing, tail, and bill; a post-ocular tawny streak usually present.

*Measurements.*¹—Male: ² wing, 96.5–101.5 (average, 98.8) mm.; tail, 71.2–81.2 (77.5); exposed culmen, 15.2–17.8 (16.5); height of bill at base, 13.1–15.1 (14.1); tarsus, 22.6–24.9 (23.1); middle toe without claw, 16.5–18.3 (17.8).

Female: ³ wing, 93.5–104.1 (average, 97.8) mm.; tail, 74.9–81.3 (78.2); exposed culmen, 15.8–20.1 (17.5); height of bill at base, 14.–15.8 (15); tarsus, 22.4–25.7 (23.6); middle toe without claw, 17.3–18.8 (17.8).

Type locality.—Tamascaltepec, Mexico, Mexico.

Geographic distribution.—Mexico and the Pacific Coast region of the United States and southern British Columbia. Breeds north in Mexico to northern Vera Cruz, Hidalgo, Guanajuato, and Oposura in north central Sonora, and on the Pacific Coast to southern British Columbia; west to Vancouver Island in British Columbia, western California, Lower California, Durango, Jalisco, Colima, and Michoacan; south to Guerrero and Oaxaca; and east to Oaxaca, Vera Cruz, Durango, northeastern Lower California, eastern California, southeastern Oregon, and west central Idaho. Winters north to southern Lower California, Mazatlan in Sinaloa and to the Valley of Mexico, and south to Oaxaca and to Chicharras in Chiapas.

Remarks.—The separation of *Hedymeles melanocephalus* into two subspecies was originally made on the basis of the difference existing between the birds of California and those of the Rocky

¹ Taken by Mr. Robert Ridgway and published in part in his "Birds of North and Middle America" (Bull. U. S. Nat. Mus., No. 50, part I, 1901, pp. 618–619). It is of importance to note that the measurement of the height of the bill is taken in a straight line from the base of the exposed culmen to the malar apex, not to the nearest point on the ramus of the mandible. This gives a substantially greater measurement than the latter and more common method, and the fact that Mr. Ridgway uses this measurement throughout the volume just quoted, which contains the *Fringillidae*, persons who consult this book should bear in mind.

² Fifteen specimens, from California and Oregon.

³ Eight specimens, from California.

Mountain region of the United States. Mr. Ridgway found, however, that the birds breeding in Mexico are much smaller than those of the Rocky Mountains from Arizona to Wyoming, and, in fact, are close to California specimens. Subsequently, by authors who regard the California race as distinct, the Mexican birds were considered identical with those from the Rocky Mountains, and both together were treated as the typical form. Mr. Ridgway, apparently for the same reason, decided not to recognize two races. It is now evident from a reëxamination of the matter that, while the Rocky Mountain bird differs appreciably from that of California, that of Mexico, though somewhat intermediate, is so near in characters to the latter that it must be referred to this form instead of to the Rocky Mountain race. This close approximation in size may be readily seen from the following average measurements of 18 adult males from Mexico, which may be compared with the measurements of the present race above given: wing, 99.6; tail, 78.5; exposed culmen, 17.5; height of bill at base, 14.7; tarsus, 23.9; middle toe without claw, 17.3. The only other alternative is the recognition of three forms, which, in view of the slight and inconstant difference between birds from Mexico and California, seems certainly not desirable. The inclusion of the Mexican bird with that of California, of course, makes the latter a part of the typical form, and the name now used for it, *Hedymeles melanocephalus capitalis*¹ becomes consequently a synonym of *Hedymeles melanocephalus*; and the Rocky Mountain bird requires a new name.

It is of interest, moreover, to note in this connection that even if the former arrangement were to be continued, neither of the names that have been used for the California bird, *Hedymeles melanocephalus capitalis* Baird² and *Zamelodia melanocephala micro-rhyncha*³ is tenable, for both are long antedated by *Fringilla maculata* Audubon,⁴ which was based on a bird from the Columbia River. In fact, the type of *Hedymeles melanocephalus capitalis* Baird,

¹ [*Hedymeles melanocephalus*] var. *capitalis* Baird, in Baird, Brewer, & Ridgway's *History of North American Birds*, II, 1874, p. 70.

² Loc. cit.

³ Grinnell, *Condor*, II, No. 6, Nov. 16, 1900, p. 128.

⁴ *Birds Amer.*, folio ed., IV, 1837, pl. 373, figs. 2, 3, 4.

which is still in the United States National Museum, is a specimen collected by J. K. Townsend on the Columbia River, July 28, 1835, and received by Professor Baird from Audubon; and it is without much doubt the very specimen from which Audubon drew the male figure of *Fringilla maculata* for his folio plate.

Birds from the State of Guanajuato in Mexico are rather large, but are referable to the present form, and possibly represent nearly or quite its northern limit in this region. Specimens from the Cocopah Mountains in northeastern Lower California are practically typical, though they have a slightly longer wing than California birds. Examples from southeastern Oregon, northeastern Oregon, and western Idaho are rather large but clearly nearer the present race.

The 104 specimens examined come from the following localities:

California.—Baird, Shasta Co. (May 11, 21, and 23, 1883; June 9, 20, and 23, 1883); Ft. Tejon; San Francisco; Stanford University (June 6, 1900); San Dimas Canyon, Los Angeles Co. (June 27, 1915); Dominguez Rancho, Los Angeles Co. (April 22, 1915); Petaluma, Sonoma Co. (May 16, 1856); Hayward (July 26, 28, and 29, 1903; Aug. 8, 1901); Three Rivers (July 12, 1904); Honey Lake (June 16, 1877); Santa Barbara (June 27 and 29, 1875); Marin County (June 26, 1878); Calaveras (1852); Cloverdale (April 22, 1889); Santa Cruz (Aug. 17, 1891); Fyffe, El Dorado Co. (June 13, 1898); Ukiah (April 26, 1889); Laguna Station, San Diego Co. (May 5, 1894); Jacumba, San Diego Co. (May 23 and 27, 1894); Palo Alto (May 30, 1898); Hayden's Ranch, San Diego Co. (May 31, 1894); Red Bluff (May 2, 1884); Riverside (April 20, 1889); San Diego (April 11, 1882); Laguna, San Diego Co. (June 13, 1894); Cameron Ranch, San Diego Co.; Heninger Flats, San Gabriel Mts. (July 8, 1905); Millard Canyon, San Bernardino Mts. (May 8, 1909); Shepherd Canyon, Argus Range (April 26, 1891); Maturango Spring, Argus Range (May 14 and 15, 1891); Chico (Aug. 5, 1904); Paraiso Springs (July 7, 1902); Camp Badger (May 17, 1894).

Idaho.—South Fork of Salmon River, 12 miles east of Warren (Aug. 2, 1913); Weiser (June 13, 1913); Idaho City (June 17, 1910).

Oregon.—Rockville, Malheur Co. (July 15, 1915); Eugene

(June 18 and 19, 1914); Tillamook (July 3, 1897); Haycreek (May 17, 1915); Portland (July 8, 1897); Homestead (June 6, 1916).

Washington.—Mt. St. Helens (Aug. 10, 1897).

Colima.—Plains of Colima (October, 1863; January, 1863).

Durango.—Chacala (March 1, 1899); El Salto (July 25, 1898).

Guanajuato.—Guanajuato; Cupataro.

Guerrero.—Omiteme (May 25, 1903).

Hidalgo.—El Chico (March 23 and 24, 1893).

Lower California.—East base of Cocopah Mts. (April 13, 1905); Seven Wells (April 16, 1894); San Ysidro Ranch (June 30, 1894); San José (February, 1860); Pichilingua Bay (Jan. 23, 1882); Gardner's Laguna, Salton River (April 24, 1894); Nachoguero Valley (June 1 and 5, 1894).

Mexico.—Tlalpam (Dec. 24, 1892); Lerma (July 3, 1904).

Michoacan.—Patzcuaro (July 20, 1892).

Morelos.—Huitzilac (Dec. 28, 1892; Jan. 1, 1893); Tetela del Volcan (Feb. 10, 1893); Cuernavaca (Jan. 5, 1893).

Oaxaca.—Oaxaca (June 21, 1894).

Puebla.—Chalchicomula (April 13, 1893); Mt. Orizaba (April 26, 1893); Orizaba; Puebla.

Sinaloa.—Mazatlan (February, 1866).

Sonora.—Near Oposura (April 14, 1887).

Tlaxcala.—Huamantla (May 11, 1893).

Vera Cruz.—Jico (July 14, 1893); Mirador, near Vera Cruz (June, 1864).

***Hedymeles melanocephalus papago*, subsp. nov.**

Zamelodia melanocephala melanocephala Auct. nec SWAINSON.

Chars. subsp.—Similar to *Hedymeles melanocephalus melanocephalus*, but larger, especially the wing, tail, and bill; postocular stripe usually absent.

Description.—Type, adult male, No. 129086, U. S. Nat. Mus.; Santa Cruz River, west of Patagone Mountains, Arizona, June 21, 1893; Frank X. Holzner, original number, 1634. Pileum, upper cervix, back, wings, and tail black, the wing-quills and the outer webs of the rectrices somewhat brownish; streaks on the cervical collar, on back, rump, and short upper tail-coverts, ochraceous tawny; long upper tail-coverts black tipped with

grayish white; the broad tips of the median wing-coverts, terminal spot on the outer webs of each of the greater coverts, a conspicuous wing speculum on the eight outer primaries (on both webs except on the outermost feather), and a terminal spot on the outer webs of each of the secondaries and tertials, white; subterminal edging on sinuated portion of the external webs of four outer primaries (excepting the outermost), and large (18 mm. long) terminal spots on the inner webs of the two outermost rectrices, also white; chin black; throat and jugulum like cervix; sides of body, of breast, and of upper abdomen, together with flanks, light ochraceous tawny, palest posteriorly; middle of breast and of upper abdomen rather dull lemon chrome; lower abdomen white; crissum ochraceous buff, the longest lower tail-coverts ochraceous buff; thighs deep fuscous, spotted with white; lining of wings lemon chrome.

*Measurements.*¹—Type: length (in flesh), 221 mm.; extent (in flesh), 336; wing, 102.5; tail, 85.5; exposed culmen, 21.5; height of bill at base, 15.5; tarsus, 25; middle toe without claw, 17.5.

Male:² wing, 99.3–109.2 (average, 103.1) mm.; tail, 76.2–86.9 (81.8); exposed culmen, 17.5–20.3 (18.5); height of bill at base, 15.–17.5 (15.5); tarsus, 22.9–25.4 (24.1); middle toe without claw, 16.3–19.1 (17.8).

Female:³ wing, 96.5–104.6 (average, 99.8) mm.; tail, 74.2–86.4 (79.3); exposed culmen, 18.–20.1 (19.1); height of bill at base, 15.–16.3 (15.8); tarsus, 22.9–25.7 (23.9); middle toe without claw, 17.3–18.5 (17.5).

Type locality.—Santa Cruz River, west of the Patagone Mountains, near the Mexican Boundary Line, southern Arizona.

Geographic distribution.—Mexico and the west central portion of the United States, and southern Saskatchewan. Breeds north to northwestern North Dakota, northeastern Montana, and southwestern Saskatchewan; west to eastern Idaho, western Nevada, western Arizona, and La Chumata, near Opodepe, north central Sonora; south to the last mentioned locality, southeastern Coahuila, and southwestern Tamaulipas; and east to southwestern Tamaulipas, central western Nuevo Leon, central western Texas, eastern New Mexico, eastern Kansas, central Nebraska, and central North Dakota. Winters from the State of Durango in Mexico to Puebla and probably to southern Mexico. Migrates east to eastern Nebraska and central Texas.

Remarks.—Color is much less important than size for the characterization of this race, and particularly for the identification of specimens, because such color differences as exist are not very

¹ Taken, except those of the type, by Mr. Robert Ridgway. The same remarks apply to these measurements as to those of *Hedymeles melanocephalus melanocephalus*, for which see footnote on page 409.

² Twenty-four specimens, from Arizona, New Mexico, Nevada, Utah, Colorado, Wyoming, and North Dakota.

³ Seven specimens, from Arizona, New Mexico, Utah, and Wyoming.

satisfactory. The absence of a tawny postocular stripe in *Hedymeles melanocephalus papago* is the best color character. The tendency of birds from the Rocky Mountains to have the crown solidly black instead of with a tawny median stripe is very inconstant, and, besides, is shared by Mexican birds, and is thus of no diagnostic value. The difference in the depth of the color on the throat, breast, sides, rump, and crissum, and the width of the white tips on the median coverts, mentioned by Dr. Grinnell in the original description of his *Zamelodia melanocephalus microrhyncha*,¹ prove by examination of our large series to be merely individual variations.

Breeding birds from Jaumave, Tamaulipas; Sierra Guadalupe, Coahuila; and Cerro de la Silla, Nuevo Leon, are practically typical of the present subspecies; and a single female from Atlixco, Puebla, without date, but which, of course, represents a winter record, is also typical. Specimens from Pyramid Lake, the Monitor Mountains, Toyabe Mountains, and Mountain City, all in Nevada, are a little small but much nearer *Hedymeles melanocephalus papago* than to the typical race. The same remarks will apply to birds from localities in southeastern Idaho.

An adult male (No. 49757, U. S. Nat. Mus.) from Camp Grant, Arizona, taken, May 14, 1867, by Dr. Edward Palmer, exhibits a peculiar individual plumage variation in the color of the upper throat, which is bright yellow.

As explained under *Hedymeles melanocephalus melanocephalus*, all the names applied to the species pertain to that race, since we now refer the Mexican representatives to the same subspecies as those from California.

Of this race 141 specimens have been examined, from the subjoined localities:

Arizona.—Fort Huachuca (May 9, 1892; July 22, 1893); Huachuca Mts. (July 26, 27, 28, and 31, 1893; Aug. 17 and 20, 1893; Sept. 5, 1893; July 12, 1888); Grand Canyon of the Colorado (May 14, 1884); Fort Whipple (July 21, 1865; Aug. 10, 1864); San Pedro Slope of Santa Catalina Mts., Pinal Co. (May 5, 1885); Santa Catalina Mts. (May 31, 1889); Squaw Peak, Verde Mts.

¹ 'Condor,' II, No. 6, Nov. 16, 1900, p. 128.

(May 9, 1888); Apache (Sept. 13, 1873); Fossil Creek, Yavapai Co. (June 20, 1885); Pinal County (Sept. 5 and 16, 1884; Aug. 19, 1884); Bowie (Aug. 15, 1874); Willow Spring (July 12, 1874); Camp Grant, 60 miles east of Tucson (May 14, 1867); Tucson (May 15, 1884); Fort Verde (Sept. 14, 1886); Oak Creek, 25 miles north of Fort Verde (Aug. 13, 1885); Santa Rita Mts. (June 8 and 11, 1884; July 1, 1884); San Francisco Mt. (Aug. 10, 1889; Sept. 5, 1889); Ash Creek, Graham Mts. (May 9 and 11, 1914); Rice, on San Carlos Indian Reservation (May 18, 1916).

Colorado.—Colorado Springs; Pueblo County (May 24, 1893; May 25, 1892); Pueblo (Aug. 1, 1874); Canyon of the Grand River (Sept. 14, 1889); East Plum Creek (June 4, 1873); Garland (June 19, 1873).

Idaho.—Shelley (July 29, 1911; Aug. 4, 1911); Pocatello (June 16, 1911); American Falls (May 27, 1911; June 4 and 5, 1911); Blackfoot (July 8, 1890); Idaho City (June 17, 1910); Blue Spring Hills, Oneida Co. (May 31, 1916).

Montana.—Benton (Aug. 7 and 8, 1910); Junction of Pilgrim Creek and Powder River, 10 miles northeast of Broadus (June 12, 1916); 10 miles southwest of Broadus (June 20, 1916); 25 miles southwest of Broadus (June 21, 1916); Highwood Mts. (Aug. 23, 1910); Fort Keogh (June, 1889; June 7, 1889); Reese Creek (Aug. 11, 1888); near Hillsdale (Aug. 15, 1888); Glasgow (June 18, 1910).

North Dakota.—Buford (May 30, 1910); Cannonball (Aug. 17, 1915); Fort Totten (July 13, 1915); Fort Union (June 26, 1843); Fort Rice (June 16, 1873).

New Mexico.—Southeastern slope of Capitan Mts. (July 15, 1903); northwestern foothills of Capitan Mts. (June 27, 1903); Willis (July 15, 1903); Rinconada (May 6 and 8, 1904); north slope of Animas Peak, Animas Mts. (July 29 and 30, 1908; Aug. 6, 1908); Bear Ridge, Zuni Mts. (June 19, 1909); Fort Wingate (June 29, 1905; Sept. 14, 1888); Pecos Baldy (Aug. 5, 1903); Oak Canyon, Raton Range (Sept. 2, 1903); Capitan (June 27, 1903); Red River at 9500 feet altitude (Aug. 16, 1904); Dog Spring, Grant Co. (May 24, 1892); west side of San Luis Mts., Mexican Boundary Line (July 14 and 19, 1892); east side of San Luis Mts., Mexican Boundary Line (June 23, 24, 25, and 26, 1892).

Nevada.—Pyramid Lake (June 12, 1889); South Twin River, Toyabe Mts. (Aug. 19, 1915); Jett Canyon, Toyabe Mts. (Aug. 13, 1915); Monitor Mts., 25 miles southwest of Eureka (June 9, 1898); Mountain City (June 12 and 14, 1898).

Texas.—Marathon (May 15, 1901); Pine Canyon, Chisos Mts. (June 3, 1901).

Utah.—Salt Lake City (May 24, 1869); Parley's Park, Wasatch Mts. (July 29, 1869); Ogden (June 7 and 8, 1872); Provo (July 29 and 30, 1873; July 30, 1872).

Wyoming.—Fort Steele (May 23, 24, and 25, 1911); Greybull (June 7, 10, and 13, 1910); Fort Bridger (May 24, 1858; June 1, 1858); Laramie; Fort Laramie (May 28 and 31, 1878); Sage Creek, fork of Stinking Creek (June 13, 1860).

Coahuila.—Sierra Guadalupe (April 27, 1902).

Durango.—Chacala (Feb. 27, 1899).

Nuevo Leon.—Cerro de la Silla (March 24, 1902).

Puebla.—Atlixco (1883).

Sonora.—La Chumata, near Opodepe (May 27, 1905).

Tamaulipas.—Jaumave (June 6, 1898).

GENERAL NOTES.

The Generic Name of the Gannets.—Several years ago Mr. G. M. Mathews proposed the recognition (Austral Avian Record, II, Nos. 2-3, Oct. 23, 1913, pp. 55-56) of *Pelecanus bassanus* Linnæus and the other Gannets as a genus apart from the other species of *Sula* Brisson. On a later occasion (Birds Australia, IV, pt. 3, June 23, 1915, pp. 204-207, 217-218) he elaborated the diagnosis of this group and showed conclusively the claims of the Gannets to generic distinction. The feathered face, the proportions of wing, tail, tarsus, and culmen, and particularly the scutellate toes and parts of the front of the tarsus are more than ample characters. He further mentioned (Birds Australia, IV, pt. 3, 1915, p. 202) what had for some time been known, that the name *Dysporus* Illiger (Prodrom. Mamm. et Avium, 1811, p. 279), which has frequently been used in either generic or subgeneric sense for the Gannets, is merely a substitute term for *Sula* Brisson, on grounds of purism. The next name in point of time, *Morus* Vieillot (Analyse Nouv. Méth. d'Ornith. Élément., April, 1816, p. 63), is preoccupied by *Morum* Bolten, 1798, for a genus of *Mollusca*, and for this reason Mr. Mathews has named the group of Gannets *Sulita* (Austral Avian Record, II, No. 7, Jan. 28, 1915, p. 123; type by original designation, *Pelecanus bassanus* Linnæus). The name *Moris* Leach (Syst. Cat. Spec. Indig. Mamm. and Birds Brit. Mus., August, 1816, p. 35; type by monotypy *Moris Bassana* [= *Pelecanus bassanus* Linnæus], he rejects (Birds Australia, IV, pt. 3, 1915, p. 202) as a nomen nudum; and *Moris* Forster (Synop. Cat. Brit. Birds, 1817, p. 59) as a "mis-spelling of *Morus* only" (Birds Australia, IV, pt. 3, 1915, p. 217). According to the A. O. U. Code of Nomenclature, Mr. Mathews is correct in the rejection of *Morus* Vieillot on account of the prior *Morum* Bolten; but neither the A. O. U. Code nor the International Code permits the rejection of *Moris* because of either *Morus* or *Morum*, since *Moris* is a word not merely of different grammatical gender, but of different classical termination. Furthermore, the generic names in the publication of Leach quoted above are not nomina nuda, being properly joined with already duly described specific names; and in this particular case the species is unequivocally recognizable. Moreover, even if Leach's name *Moris* be disregarded, as of course it should not be, it would then be necessary to fall back on *Moris* Forster, 1817, which of course is a perfectly legitimate substitute for *Morus* Vieillot. Thus, in any case, the generic name of the Gannets will become *Moris*, and the species stand as follows:

Moris bassana (Linnæus).

Moris capensis (Lichtenstein).

Moris serrator serrator (Gray).

Moris serrator dyolti (Mathews).

HARRY C. OBERHOLSER, Washington, D. C.

Polysticta versus Stellaria — a Correction.— In the recent note on the generic names *Polysticta* and *Stellaria* (The Auk, XXXVI, No. 2, April, 1919, p. 277), there occurs a wrong citation, to which Dr. C. W. Richmond has kindly directed our attention. Lest this cause confusion it seems worth while now to make the necessary correction. We have cited the original place of publication of *Polysticta* Smith as "Illust. South Afr. Zoöl.," whereas it should be "Report Expedition Explor. Central Africa." The date, however, is correct as given — "June (or later) 1836." — HARRY C. OBERHOLSER, Washington, D. C.

Megalestris versus Catharacta.— Mr. G. M. Mathews has already indicated (Novit. Zoöl., XVII, No. 3, December 15, 1910, p. 498; Birds Australia, II, pt. 5, January 31, 1913, p. 489) that the name *Catharacta* Brünnich must be used in place of *Megalestris* Bonaparte, and in this he seems to be quite right. Some additional details, however, regarding this interesting and complicated case, about which so much has been written, may not be out of place from the viewpoint of American ornithology. The generic name *Catharacta* was originally proposed by Brünnich (Ornith. Bor., 1764, p. 32) for the following four species: (1) *skua* (= *Megalestris skua* Auct.); (2) *cephus* (= *Stercorarius parasiticus* [Linnæus]); (3) *parasitica* (= *Stercorarius longicaudus* Vieillot); (4) *coprotheres* (= *Stercorarius parasiticus* [Linnæus]); and its type was apparently first designated by Reichenbach (Syst. Avium, 1851, p. v) as *Catharacta skua* Brünnich. Dr. J. A. Allen, in discussing this case at considerable length (The Auk, XXI, No. 3, July, 1904, pp. 345-348), came to the conclusion that *Catharacta* was untenable on account of the prior *Catarractes* Brisson (Ornith., VI, 1760, p. 102; type by monotypy and tautonomy, *Aptenodytes chrysocome* Forster). This, however, was before the publication of the revised edition of the American Ornithologists' Union Code of Nomenclature, which provides that names differing in classical endings shall for purposes of nomenclature be considered distinct. Since this applies, of course, to the present case, the name *Catharacta* Brünnich becomes tenable, for it is not to be rejected on account of the previous *Catarractes*. The following species, together with their subspecies, will be affected by this change:

- Catharacta skua* Brünnich.
- Catharacta antarctica* (Lesson).
- Catharacta chilensis* (Saunders).
- Catharacta lonnbergi* Mathews.
- Catharacta macconnicki* (Saunders).

HARRY C. OBERHOLSER, Washington, D. C.

Destructive Invasion by an Australian Rail.— Irregular migration of species of birds in large numbers is a phenomenon seemingly unknown in the United States since the days of the Passenger Pigeon; indeed such a happening is rare in any part of the world. Readers of 'The Auk' will

no doubt be interested in the following account quoted from the 'Journal of Agriculture of South Australia' (Vol. 22, No. 7, Feb. 1919, pp. 556-57):

"The Murray River settlements are this year suffering an invasion of black-tailed native hens, *Tribonyx ventralis*. These birds, which have the habit of migrating in flocks, are visiting some of the irrigation settlements in countless thousands, and have already done considerable damage by eating out lucerne plots and other green crops, and devouring fruit. In some cases fruitgrowers found it necessary to stack trays on which apricots were being dried, and there is considerable apprehension in some quarters in regard to the safety of the grape crop.

One satisfactory feature in so far as the native hen is concerned is that the experience of the past suggests that it appears only at long intervals. In 1846 it is reported that the bird invaded the streets of Adelaide, in 1886 it reached Perth, and Northern Victoria was visited in 1909."—W. L. McATEE, *Washington, D. C.*

***Sarcidiornis sylvicola* in Venezuela.**—I should like to report the collection of three living specimens of *Sarcidiornis sylvicola* Ihering, in November, 1918, near Barcelona, Venezuela. These birds were taken by Gustave Sebillé, a professional collector, who netted them in a nearby lagoon. They are now living in the New York Zoological Park. There are two males and one female, just beginning to assume adult plumage, the combs of the males being represented by a slight swelling at the base of the upper mandible. The resemblance between these birds when in immature plumage and wild Muscovy Ducks of the same age is striking, though the legs of the comb ducks are noticeably longer.

As they were quite immature when taken, it is reasonable to suppose they were reared in the vicinity of their capture. Barcelona is on the northern coast of Venezuela. The distribution of *Sarcidiornis sylvicola* is given by Brabourne and Chubb as Brazil, Paraguay and northern Argentina, so the present record seems to imply a considerable extension of range. —LEE S. CRANDALL, *New York Zoological Park.*

Occurrence of the Red Phalarope in Pennsylvania.—Mr. Edmund Cocks recently sent to the Academy of Natural Sciences of Philadelphia for identification, a specimen of the Red Phalarope (*Phalaropus fulicarius*) which had been picked up in a dying condition near George School, Bucks County, Pa., on December 15, 1918. Later the specimen was mounted and presented to the local collection at the Academy. So far as I can ascertain this is the first record of the species in the state, and even on the coast of New Jersey we have very few records, the Northern Phalarope being the most frequent of the three species of the family. Curiously enough shortly after the capture of this specimen a skin of the same species was presented to the Academy by Dr. C. E. Ehinger, which had been secured near Lenape, Chester Co., Pa., at about the same time.

West Chester is about forty miles southwest of George School. The two occurrences would seem to indicate that a flock of these birds had been blown inland from the ocean and that these and perhaps others had become exhausted.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

The Status of the Genus *Archibuteo*, Brehm.—Since proposing (The Auk, XXXVII, No. 2, April, 1919, p. 282) to change the name of the genus *Archibuteo* Brehm to *Triorchis* Kaup, the writer has had occasion to investigate the generic status of this group. The two Rough-legged Hawks, *Falco lagopus* Brünnich and *Falco ferrugineus* Lichtenstein, have for a long time been generically segregated from the species of *Buteo* because they have the tarsi completely feathered in front and on the sides. Dr. Hartert has recently (Hand-List Brit. Birds, 1912, p. 115; Vögel paläarkt. Fauna, Heft IX [Band II, Heft 3], October, 1914, pp. 1114, 1128-1131), advocated the elimination of *Archibuteo* as a genus because of the intermediate character of some species of *Buteo*. The results of our own study may be worthy of brief notice in print, as they seem, much to our surprise, completely to justify Dr. Hartert's position. The common Rough-legged Hawk of Europe, *Archibuteo lagopus lagopus* (Brünnich), and its North American subspecies, *Archibuteo lagopus sanctijohannis* (Gmelin) exhibit the extreme extent of feathering on the tarsus, which in these birds extends over the base of the toes. This condition, compared with that seen in *Falco buteo* Linnaeus, the type of the genus *Buteo* Lacépède, would seem to indicate that *Archibuteo* is an excellent genus. Examination of other species of both groups shows, however, that in this character there is a complete chain of intermediates connecting *Archibuteo lagopus* with *Buteo buteo*, through *Buteo augur*, *Buteo desertorum*, *Buteo leucocephalus*, and *Buteo ferox*. In fact, *Archibuteo ferrugineus* is also somewhat intermediate in this respect, since the feathering on its tarsus does not cover the base of the toes, nor in some specimens even the lower end of the tarsus. Some examples of *Buteo ferox* have the tarsus feathered in front, even to the base of the toes; and *Buteo leucocephalus* has it covered for at least the upper two-thirds. Failing other characters to separate *Archibuteo lagopus* from *Buteo* it must be included in that group. Contrasted with *Archibuteo lagopus lagopus* and *Archibuteo lagopus sancti-johannis*, the American species *Archibuteo ferrugineus* looks very different, with its broad bill and rather long tarsus; and Mr. C. J. Maynard (Birds Eastern North Amer., pt. 40, 1896, p. 691) has generically separated it under the name *Brewsteria*, because of these differences, its much heavier sterno-trachialis muscle, and the lack of glandular ridges on the proventriculus. The broad bill and rather long tarsi are shared almost completely by *Buteo leucocephalus* and *Buteo ferox*; the glandular ridges on the proventriculus in *Archibuteo lagopus* are, Mr. A. Wetmore thinks, merely adventitious wrinkles; while the heavier sterno-trachialis muscle as compared with *Archibuteo lagopus* is doubtless merely a difference due to the larger size of *Archibuteo ferrugi-*

neus. We do not see, therefore, how *Archibuteo ferrugineus* can be separable, even subgenerically, from *Archibuteo lagopus*; or *Archibuteo lagopus* and *Archibuteo ferrugineus* generically from *Buteo*.

The two species of *Archibuteo* seem, however, to constitute an excellent case for the employment of a subgenus, since they show structural characters connected by intermediates, which is our idea of a subgeneric group. Certainly we can not consistently longer consider the Rough-legged Hawks generically distinct. Their names hereafter should, therefore, be

Buteo lagopus lagopus (Brünnich).

Buteo lagopus sanctijohannis (Gmelin).

Buteo ferrugineus (Lichtenstein).

HARRY C. OBERHOLSER, *Washington, D. C.*

Golden Eagle at East Moriches, N. Y.—A Golden Eagle (*Aquila chrysaetos*) visited East Moriches, Long Island, N. Y., on February 7, 1919. He raided a flock of hens and took one to a telegraph pole where he ate it. On February 10, what I believe to have been the same bird was seen by Mr. Henry D. Terry. I have no report of a previous visit here of this rare bird within the past fifty years. From memory and associated events it was just about fifty years ago that Jonathan Robinson shot one in Manorville, four miles north of this village and my father bought it and sent it to Fulton Market, New York City, for sale.

The Bald Eagle is a resident here and a pair nested for many years on an old dead pine tree about a mile from the village.—HORACE M. RAYNOR, *East Moriches, N. Y.*

Arctic Three-toed Woodpecker at Southampton, Mass.—The article in the 'General Notes' of the January number of 'The Auk' on the Arctic Three-toed Woodpecker (*Picoides arcticus*) prompts me to record one observed recently near Southampton, Mass.

Together with a companion on Lincoln's birthday, I went to find this rare Woodpecker which had been reported in November and December as having always been found in a rather extensive patch of white pine that had been burned over the preceding spring. We succeeded in locating him after a fifteen mile automobile drive over dusty roads that usually at this time of year are buried under a foot or two of snow. This winter is remarkable also for an unusual number of Hairy Woodpeckers, of which we noticed nearly a dozen, with half as many Downies. My companion at length located the Arctic by the tapping sound characteristic of Woodpeckers. But the beat was not as regular as that of the above mentioned species and somewhat slower.

The bird allowed us to approach to the very tree in which he was at work, so that an excellent observation was obtained. The sides we noted instead of being pure white, as in the adult spring plumage, were a dull gray color with small black bars. Whether this is an immature marking or winter

plumage, I have yet to determine. The golden yellow crown patch was distinct as were the characteristic three toes. This particular stand of charred and dead pines is undoubtedly what is keeping him here all winter. Evidence of his search for the particular beetle that bores in the dead wood was on every side and the bark was stripped from many of the pines. He gave us several examples of his method of doing this; firmly secured to the tree by his toes and using the two prominent quill points of his black tail as a support, he would seize the edge of the bark with his long blunt bill and force head, bill, and bark down sideways until a considerable portion of the bark would break off. He also afforded a striking resemblance to a large knot, when with head drawn far back he "froze," — perhaps because of a nearby Hairy that had been working tree by tree nearer until he darted straight at Arctic trying to intimidate or dislodge him, but without success. Of us Arctic showed little or no fear either, for several vigorous kicks against the tree trunk failed to frighten him, while a stick thrown higher up in the same tree merely sent him to another one some ten or fifteen feet away where he resumed his work.

In Vol. XVII of 'The Auk' I note a record in the eastern part of Massachusetts for January 1899. The observer concludes his remarks with the statement: "This record must be pretty far south for this species, especially in such a mild and open winter." Why it is that this boreal bird was not driven south last year when we had one of the severest winters on record and chose this year instead, is one of the as yet unanswered questions pertaining to bird lore. The query uppermost in my mind is — Does the mild and open winter have anything to do with the appearance of the Arctic Three-toed Woodpecker along the southern border of his range?— AARON C. BAGG, *Holyoke, Mass.*

Blue Jay Again in Jefferson Co., Colorado.— In Vol. XXXIV, No. 2 of 'The Auk' I reported the occurrence of three Blue Jays (*Cyanocitta cristata cristata*) one and a half miles south of Broomfield, Colorado. These birds were very wild and it was impossible to get close enough to them to obtain a specimen. On October 27, 1918, I was more successful. On this date I was again startled by the cry of a Blue Jay coming from an apple tree beside a small patch of corn not far from our house. Securing my gun, I hurried to the spot and obtained the specimen, a female, which is before me as I write this article. She was unafraid and seemed perfectly at home beside this patch of corn.— A. H. FELGER, *Denver, Colo.*

Song of the Canada Jay.— The note entitled "The Song of the Blue Jay," which was published in 'The Auk' for January, 1919, interests me much, and causes me to wonder if it is generally known that the Canada Jay possesses a true song also. The following extract from my notes, dated May 7, 1911, may be worth publishing in this connection.

"While walking through the woods between Long Swamp and the

Webster Road near the rear of the farm I met the first individual of this species (Canada Jay) that I had ever seen. He was not at all shy and I observed him for some time with my opera-glasses at a distance of about twenty feet. I also heard his song, which was quite pleasing and somewhat resembled that of the Catbird, though in this instance, at least, it was not so loud, apparently being uttered with closed bill. Besides this he uttered a disagreeable note similar to one of the scolding notes of the red squirrel."

This observation was made in the woodland on my father's farm, near Yarmouth, Nova Scotia. Although I have not infrequently observed Canada Jays in Nova Scotia since the date of this occurrence, I have never since then heard one of them utter any pleasing or musical notes, or anything which could be considered a song.—HARRISON F. LEWIS, *Quebec, P. Q.*

Evening Grosbeak in New Jersey.—On the 1919 Washington's Birthday field trip of the Delaware Valley Ornithological Club, to New Lisbon, N. J., a flock of 27 Evening Grosbeaks (*Hesperiphona vespertina vespertina*) were observed in the same trees where the birds were found on February 22, 1917. This occurrence is surprising since no others have been reported in this vicinity during the past winter and they have apparently not been common in the states to the northward.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

The Pine Grosbeak (*Pinicola enucleator leucura*) in Northwestern New Jersey.—Through the kindness of Mr. Justus von Lengerke, I am able to record a flock of four Pine Grosbeaks seen by him at Stag Lake, Sussex Co., N. J., on February 9, 1919.

The birds, two of which were adult males, were observed at a distance of a few feet. Through previous acquaintance with the species they were at once recognized as Pine Grosbeaks.

That these birds seldom reach Sussex County is evident from the fact that, during a residence of many years at Stag Lake, Mr. von Lengerke had never before seen this species there.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

Early Occurrence of the Red-breasted Nuthatch in New Jersey.—On July 18, 1918, I saw a Red-breasted Nuthatch (*Sitta canadensis*) in the Pitch Pines bordering Lily Lake, Cape May Point, N. J., at the southernmost extremity of the state. When first seen it was some distance away and I supposed for the moment that I had a straggling example of the Brown-headed species before me, which occurs regularly in southern Delaware, across the bay, but upon approaching I found it to be the Red-breasted species. I watched it at close quarters for fifteen minutes, but saw no other individuals. This is much the earliest record that I have for southern New Jersey or the Philadelphia district.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

The Range of the Short-tailed Mountain Chickadee (*Penthestes gambeli abbreviatus* Grinnell).—The form of *Penthestes gambeli* recently described by Dr. Joseph Grinnell (Univ. Calif. Publ. Zool., XVII, No. 17, May 4, 1918, p. 510) as *Penthestes gambeli abbreviatus* is an excellent subspecies. The range given by its describer is "The higher mountains of central and northern California, southern Oregon, (probably this subspecies), and northwestern Nevada." To this we are able so greatly to add from material in the Biological Survey collection, that it seems worth while to put on available record for the benefit of those who may have occasion to use the information, a statement of the geographic distribution of *Penthestes gambeli abbreviatus*, so far as now known. This subspecies breeds and doubtless is a permanent resident north to Thudade Lake in northern British Columbia; west to central British Columbia, western Washington, western Oregon, and central northern California; south to Mt. Whitney in central eastern California; and east to northeastern California, northwestern Nevada, Lardo and Dickey in central Idaho, and Smoky River and the vicinity of Henry House in central western Alberta.—HARRY C. OBERHOLSER, Washington, D. C.

Note on Audubon's Labrador Trip.—Mr. James White, assistant to the chairman of the Canadian Commission of Conservation writes me in connection with the meeting between Audubon and Bayfield, that some twelve years ago he had located Capt. Bayfield's Journals of the Surveys in the Gulf of St. Lawrence, in the possession of the Captain's son in Vancouver, B. C. They were later presented to the Canadian Archives and Mr. White had the following extract copied. Opposite the first entry were the names of the Audubon party as follows:

Mr. J. J. Audubon, Senior
 Mr. J. W. Audubon, junior, his son
 Mr. Thos. Lincoln, Maine
 Mr. Josh Cooledge, mate of the Ripley
 Mr. Geo. G. Shattuck, Boston medical student
 Mr. Willm. Ingall, Medical student
 Mr. Emery, Master of the Ripley

22d June, 1833.—Light breezes S. E. with rain. At 3.30 A. M. Tacked and stood in to the E. N. E. & N. E. sounding,—At 6 saw the land but could not make it out for some time on acc^t of the rain. At 7 perceived that it was Little Natashquam—several schooners at anchor inside the rocks made signal for a Pilot with a Gun—At 7.30 the Master of the Shelburne (Phillips) of Liverpool near Halifax came onboard and took us in for which I paid him 20s Cur: Found 6 american Schooners belonging to East Port in the State of Main all belonging to one person who is here with them. We also found another American Schooner here the Ripley of Eastport employed

in a very diff^t way having Mr. Audobon onboard the Naturalist with several young men two of them Medical students of Boston. these take the departments of Botany &c., &c. in short they collect everything. But Mr. Audubon has come principally for the purpose of studying the habits of the water Fowl with which the coast of Labrador abounds and to make drawings of them for his splendid work upon the Birds of America. He sent his card onbd with a polite note & I received him onboard and we found him a very superior person indeed. It is probable we shall meet often as he proceeds along the coast which we are going to survey. Rain all the remainder of the day.

23d June, 1833.

Light breezes S. S. W. and fogg^s wear in the early part of the day but cleared before noon. Sent Mr. Bowen to Survey the small harbour &c. Obs^d for Latitude.— returned Mr. Audobon's visit and was delighted with his drawings, the Birds being represented of the same size as when alive, and most beautifully painted.— P. M. obs^d for Time, & diff^t Longitude — also for trace bearing, Variation & angles for the survey of this small anchorage.

At Night the wind hauled more towards the S. E. with fog & drizzling rain.

In walking over the Islets & rocks of the mainland today we found large masses of snow remaining in every part.— Nevertheless 10 or 12 species of Flowers were seen.—

24th June, 1833.

Light breezes S. W. with fog and clouds wear. P. M. it cleared and I obs^d for Time and rates. Mr. Bowen finished the survey of the harbour and adjacent rocks— Mr. Audubon dined with us onbd the Gulnare.

Three hundred vessels are said by the owner of the American schooners to be employed in the Fisheries upon this coast averaging 75 Tons & manned by 50 men to each six vessels equal to 2,500 men. of these one half are French, one forth British, and the rest American. Each Vessel takes away one with another about 1500 Quintal of Cod Fish of 112 lbs. pr Quintal. The Fish average about 4 pounds in weight being small on this coast. We heard from the Americans about the Eggers today as a set of people whom we now for the first time heard spoken of collectively as a body. We had previously no idea of the extent of the "Egging business" as our informant termed it. It appears that in some seasons 20 small schooners or shallops, of from 20 to 30

Tons, load with eggs from this coast. Halifax is the principal market for them where they at times fetch a much higher price than Hen's eggs. They are stowed in the hold in bulk and keep for several weeks without any preparation. These men the Eggers combine together and form a strong company — they suffer no one to interfere with their business driving away the fishermen or anyone else that attempts to collect Eggs near where they happen to be. Might makes right with them it is clear — they have arms and are said by the Fishermen not to be very scrupulous in using them. As soon as they have filled one vessel with eggs they send her to market others follow in succession so that the market is always supplied but never overstocked. One vessel of 25 tons is said to have cleared 200 pounds by this "Egging Business" in a favorable season.

21st July, 1833.— Strong breezes S. W. and Squells of wind & rain occasionally. We started early as usual and at $\frac{1}{2}$ past 8 A. M. arrived at Grand Mecattina point and proceeded to the third Islet off it to the S. E.^{wd}. Mr. Bowen arrived soon after and we remained on the island 'till Noon and obs^d for Latitude through the fog which came on at 10 A. M. with a very fresh Gale from the S. W.

Just as we arrived the Ripley Mr. Audubon's Schooner hauled in round the islands intending to anchor in Grand Mecattina harbour but not knowing the place they ran into Portage Bay instead.

At 1 P. M. Mr. Bowen & I ran in for shelter under double reefed sails and were received with the greatest kindness by Mr. Audubon, his Son Mr. Audubon junior the other gentlemen of the party and the Captain of the Ripley Mr. Emery. Mr. Audubon kindly invited us to dine and we passed a very pleasant afternoon with him & his party and encamped in the evening in the same corner.

Mr. A —'s kindness did not stop here understanding that we were in danger of being short of provisions before we could complete the Survey back to the Gulnare he offered me every assistance in his power and I accepted of a Ham and some potatoes which last were kindly offered by Mr. Emery. I purchased from the latter three days allowance of Bread and Beef for the party which set me quite at ease on the score of provisions. The S. W. Gale and Fog continued to night and then we had rain in addition Mr. Audubon and his party came onshore to see us in our Tents in the evening.

— CHARLES W. TOWNSEND, *Boston, Mass.*

Destruction of Sea Birds in Labrador.—The following extract from a letter received from Dr. Robert T. Morris of New York City, is deserving of wide publicity and is therefore placed before the readers of 'The Auk.'

"Dear Dr. Townsend,

Your treatment of the subject of conservation in Labrador in the book, "In Audubon's Labrador," which I have read with great interest, meets with my approval or more than that. On my trips to the Gulf Coast of Labrador and on the eastern coast as far north as Hamilton Inlet I observed that the Newfoundland codfishermen were in the habit of raiding all of the islands and adjacent mainlands on Sunday and making away with the eggs and the young of all of the seabirds. Some of the islands were wholly deserted so far as bird life was concerned and your Captain Joncas told me that in addition to the Newfoundland fishermen a number of men were engaged in the business of egging and that the eggs were preserved in brine and sold to the crews of various vessels. He said that the egg hunt was continued until such a late date in the season that the young birds which were finally hatched were not strong enough to withstand the autumn storms and he had seen thousands of young birds thrown up on the beaches. When I have been on the coast the Newfoundland fishermen not only destroyed young birds and the eggs but they shot many of the mother birds for sport, leaving them where they fell on the ground if they were of species not good to eat.

The waste of food fish also is very great along the Labrador coast. Small cod and hake which are not desired by the fishermen are often smothered in traps or killed when the traps are emptied and I have seen them floating for miles on the surface when the trappers were at work. The cod trappers catch a great many adult salmon by setting their nets in the channels when the salmon first make their way toward the rivers. This is illegal but is winked at by the officials. A remarkable waste of salmon occurs in September when the herring nets are used near the coast. This is the time of year when the smelts are descending from the rivers and putting out to sea. They are captured in quantities in the herring nets." — CHARLES W. TOWNSEND, *Boston, Mass.*

Specific Names in the Nominative Case.—It is a satisfaction to receive corroboration of the *Hirundo erythrogaster* ruling from Dr. Dwight, with his most timely citation of the International Code definition of the sort of words that may be used as specific names (see Auk, XXXVI, 1919, p. 117). It is curious, however, that he should reverse his stand when it comes to the subspecific name *salicarius*. In this connection I have again appealed to my senior colleague, Professor W. A. Merrill, head of the Latin department of the University of California. Professor Merrill assures me that although the word *salicarius* is not to be found in any Latin dictionary, it is "in good Latin form" and may be considered *either* as a noun, meaning "something which has to do with a willow tree," or as an adject-

tive, meaning "pertaining to a willow tree." A parallel is afforded in the word *legionarius*, originally an adjective but which came to be used as a noun—a legionary, that is, a soldier of a legion. A great number of similar nominatives are listed by Professor Merrill in a special paper of his (Univ. Calif. Publ. Class. Phil., vol. 2, 1910, pp. 57-65).

It is true that Professor Merrill also says that the combination *Guiraca caerulea salicarius* is in poor taste as regards its "Latinity"; that is, the Latins would not have written it that way. This consideration is, of course, immaterial in nomenclatural questions, which questions are now settled by arbitrarily formulated rules, one of which prescribed retention of words of this category unchanged in construction from the form in which they were first proposed.

As originally proposed, the word *salicarius* was a noun, and it must retain its own gender, masculine, irrespective of the genus name with which it is associated; it is, in truth, a "substantive in the nominative in apposition with the generic name." It would thus appear that *Guiraca caerulea salicarius* is, from the nomenclatural standpoint, a perfectly tenable combination for the California Blue Grosbeak, and must be kept inviolate.—J. GRINNELL, *Museum of Vertebrate Zoology, Berkeley, California.*

Editions of Baird, Cassin and Lawrence's 'Birds of North America.'—This well known work appeared first in 1858 as Volume IX of the 'Pacific Railroad Surveys' and constitutes a complete summary of the ornithology of the various expeditions as well as of the Mexican Boundary Survey. The separate report on the ornithology of the last as well as of several of the Pacific Railroad expeditions, did not appear until a year or two after Volume IX, but their contents are included in it. While no plates accompanied Volume IX there were thirty-three colored plates published along with the reports of the various surveys and twenty-five with the Mexican Boundary report.

In 1860 Volume IX appeared under a new title, 'The Birds of North America' with the imprint, Philadelphia, J. B. Lippincott & Co. The text is exactly the same from p. xvii of the introductory portion to the end of the volume and apparently printed from the same plates as the original. The four pages of "Preface" are reprinted in three pages, apparently without change of wording but in smaller type, the "Contents" are reprinted and slightly altered, and a page of "Advertisement" is added as well as a different title page.

An atlas of one hundred colored plates accompanied this work. There is a title page identical with that of the text except for the substitution of "Plates" for "Text"; pages i-ii contain a preface; pp. iii-viii, "Explanation of Plates"; and ix-xi "Systematic List of Illustrations."

Of the thirty-three plates of the various survey volumes, thirty-one appear in this atlas, nearly all of them being retouched and some of them redrawn but all these closely resembling the originals, names have been

added to all of them, which were originally lacking, and the plate numbers and references at the top are changed or reengraved. In some cases the plates of the original reports are superior to those in the Atlas while in others the latter are the better impressions. The coloring of the Atlas plates is nearly always better done. Curiously enough the numbers in the upper right hand corner of the original plates of the separate surveys are the numbers of their position in the Atlas and have no reference to their position in the reports. Two of the original plates, that of the Horned Lark and Mountain Bluebird (Report on the 38th., 39th., and 41st. Parallels; plates XXXII and XXXV) do not appear in the Atlas, their places being taken by new plates of the Florida Grackle and Red-naped Sapsucker respectively. They are however, Dr. Richmond tells me, bound up in Prof. Baird's copy at the U. S. National Museum, in addition to the substituted plates, the Bluebird by the way being uncolored; but this was undoubtedly done for his personal convenience.

Of the twenty-five plates of the Mexican Boundary Report twenty-four appear in the Atlas somewhat retouched and sometimes with the addition of a landscape background lacking in the original. They are numbered I-XXIV as in the original report. Plate XXV however, is replaced by a new plate (LXIII) consisting of a reduced representation of the Black-bellied Tree Duck which occupied the whole plate in the original, and a figure of the Fulvous Tree Duck in addition. The remaining thirty-seven plates appear for the first time in the Atlas.

The above facts are not new, except, perhaps, the exact collation of the plates with those of the original reports, and are given in Coues' Bibliography and doubtless elsewhere, as well as in the preface to the 'Birds of North America' itself. Recently, however, my attention has been called to some other facts about the work which I do not find mentioned in any bibliography. I have before me a copy of the Atlas, bearing the imprint of D. Appleton & Co., New York, 1860; which shows that Lippincott was not the only publisher who handled the work. This edition of the Atlas seems to be exactly like the Philadelphia imprint, and doubtless the text, which I have not seen, is identical. There is, however, another edition which is decidedly different and which bears the imprint; Salem: Naturalist's Book Agency, 1870; with Philadelphia: J. B. Lippincott & Co., 1860, above it in smaller type.

The Atlas of this edition is inferior to that of 1860. Many of the plates have been again retouched and some redrawn often in a decidedly crude fashion, while one plate, No. XIV *Buteo calurus*, is entirely different, the bird facing the other way. In a large number of these plates moreover, the names are lacking, while in the redrawn ones there is no border line and no lettering whatever except the plate number.

The coloring of the Atlas of 1860 is far better done than the plates of either the original reports or those of the 1870 edition while the coloration of a number of the figures differs materially in all three, the Sandwich Spar-

row being pinkish brown in one case and deep olive green in another. There seems to be no record of the names of the artists who were responsible for these plates.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

Observations on the Shifting Range, Migration and Economic Value of the Bobolink.—The inclusion of the Bobolink among the birds protected by the recently consummated treaty with Canada for the protection of migratory birds, resulted in an immediate demand for an investigation of its present-day economic status, which was carried on in the states from New Jersey south to Florida, inclusive, in August to October, 1918. A few points were brought forcibly to the writer's attention which perhaps are not wholly realized by ornithologists in general. First, as to the shifting of breeding grounds by the Bobolink, for to my mind that is what is occurring. The trend of the bird's breeding range to the northwest is unmistakable; for instance in the first edition of the A. O. U. Check-List, the Western limit of the breeding range was given as the Great Plains; in the second edition, 1895, as Nevada, Idaho and Alberta, and in the third edition, 1910, as British Columbia. Now unless there has been a considerable increase in the numbers of the species, the population of eastern breeding grounds must have fallen off, and this latter condition is one of which New England observers in particular complain. Rice growers in the South who have the best opportunity of judging the abundance of the species contend that the bird is less numerous than formerly. Putting these two things together, a vastly extended range and no increase, possibly a decrease in number of individuals, diminution of the Bobolink population somewhere is inevitable. This condition has actually been observed in the northeastern states, completing the cycle of evidence that a shift in range has occurred.

The persistence of birds in maintaining migration routes is particularly exemplified by the Bobolink. After extending its range westward, over hundreds of miles and across two mountain systems, the species with insignificant exceptions returns to the Atlantic Coast before turning to the south. The main fall migration path seems to converge into a funnel not far south of the breeding range through which the birds pour in a narrow stream along the coast of southern North Carolina, South Carolina and Georgia, expanding again so as to cover the whole breadth of peninsular Florida. Even farther north, before this migration stream is definitely formed, the birds are much more abundant near the coast than inland as in the wild rice marshes on tidewater from New Jersey to Virginia. Not only do the vast majority of Bobolinks seek a narrow track along the Atlantic seaboard for their southward migration, but they reach all parts of it almost simultaneously. Florida seems to form an exception to this statement, but in Georgia and South Carolina both the earliest dates (July 13-19) of fall migration and the bulk arrivals (August 15-21) are as early as those for the vicinity of Philadelphia. At a plantation on Goose Creek, South Caro-

lina, where ricebirds are expected in large numbers about August 21, they arrived this year August 1.

The migration of the Bobolink is a long drawn out process. It begins early in July, and whilst at its height in the United States from the middle of August to that of September, the species has been known to arrive in numbers in northern South America, early in September, a date prior to the time great damage is still being done by large flocks in the United States. By the middle of October, often earlier, cold weather has driven the birds out of all of the United States but Florida; there Bobolinks linger and, it is claimed by some, winter.

As a result of this straggling habit of migration no large proportion of the species is present in a given area at one time. It is fortunate that this is true, for the Ricebird is as destructive as ever where conditions permit. War prices stimulated the once decadent rice industry of the South Atlantic States and the acreage this year probably is in excess of 6000. The destruction of rice by Ricebirds must average about 25%, and the money loss for rice alone, not including expense incurred in attempts to protect the crop, probably in the neighborhood of \$150,000.

Were the loss much less it would be a mistake to protect the Bobolink, since its depredations fall so heavily upon individual planters whose main money crop is rice. Not only is rice damaged in the fall, but sprouted rice and oats and wheat in the milk suffer almost as heavily from depredations of the birds on their spring migration. From personal observation I regard the Bobolink as the most exasperating bird pest of the United States. Overwhelming flocks of them (I have seen 25,000 to 30,000 on 60 acres of rice) pitch in the ricefields from which it is almost impossible to dislodge them. If by great effort the flocks are put on the wing, they simply wheel and in a few moments are settled upon the rice again. When this cereal is in the milk the birds keep a steady stream of rice milk running through them. In the intestines it seems hardly altered from the state in which it is swallowed, and certainly only a small proportion of its nutriment is used. The Ricebirds not only gorge themselves by day but even continue their feeding on moonlight nights. At length they become so fat and lazy as hardly to be dislodged from the rice by any means. In many fields, half of the rice is destroyed, and in some all of it, or at least so much that harvesting is unprofitable. Fancy yourself a rice planter, seeing the promised results of your investment and labor melting away before the onslaught of these pests, and you may well understand why the Bobolink's song, however attractive, and its insectivorous habits in its breeding range, seem trivial reasons for protection of so destructive a species.

As a consequence of these investigations an order has been issued by the U. S. Department of Agriculture, permitting the killing of the birds, in Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia from September 1 to October 30 inclusive, and in the states from Virginia to Florida from August 16 to November 15, but no birds may be sold or shipped for purpose of sale.—W. L. McATEE.

RECENT LITERATURE.

'**A Practical Handbook of British Birds.**'—So rapidly does ornithological knowledge increase that new books upon the birds of any country seem to be always in order. Even in England with its wealth of ornithological literature there seems to be a need for a new general work on the bird life, and this being the case none are better able to produce the desired volume than the authors who are associated in the present undertaking.¹

From the introductory note we learn that the work is to consist of keys to the species, subspecies and higher groups; full descriptions prepared on a uniform plan and covering all the plumages and molts, the resources of Lord Rothschild's collections and those of the British Museum having been drawn upon, in this connection. Field characters are also to be described as well as breeding habits, food, geographic distribution and migration; the various authors dealing with the subjects upon which they are authorities.

The present part deals with the Corvidæ, Sturnidæ, Oriolidæ and part of the Fringillidæ. The nomenclature follows that of the 'Hand List' for which several of the authors are responsible, and there are references to the original description of each species as well as to several of the standard works on British birds. Then follows a very complete description with a short paragraph giving the names and characters of the allied continental races, but where two races occur in the British Isles they are both treated at length under separate headings. Under breeding habits are given a brief description of the nest and eggs, with measurements; a statement of the breeding season, length of incubation, fledgling period, etc. The food is briefly summarized and the character and extent of the migratory movement is given, with average and extreme dates. The definiteness and compactness of the whole treatment are admirable and only those who have attempted to collect such information about even our commonest birds can appreciate the difficulty and the labor that are involved. In spite of the vast amount of published matter relating to American birds we doubt if such a compilation on the North American avifauna would be possible today. Let any one make the attempt regarding the birds of his own neighborhood and he will be surprised at the many points about which information is lacking.

Part I, the editor tells us, was printed before the war, but its issue was suspended, so that certain additions are necessary to bring it up to date.

¹ *A Practical Handbook of British Birds.* Edited by H. F. Witherby, F. Z. S., M. B. O. U., Editor of *British Birds* (Mag.) Authors of the Various Sections; Ernst Hartert, Ph. D. M. B. O. U., Annie C. Jackson, H. M. B. O. U., Rev. F. R. C. Jourdain, M. A., M. B. O. U., C. Oldham, F. Z. S., M. B. O. U., Norman F. Ticehurst, M. A., F. R. C. S., M. B. O. U., and the Editor. Illustrated with Colored Plates and Numerous Text Figures. London, Witherby & Co., High Holborn, W. C. I. In Eighteen Parts. Part I (pp. 1-64). March 3, 1919. Price 4s. net per part.

The Shetland Starling is added at the end of the introductory note and other emendations are made on the cover, all of which will be properly incorporated in an appendix in the last part of the work.

Illustrations are numerous but are intended, as is explained, solely as an aid to identification. They are mainly line cuts of heads, bills and feet, etc., and there is one excellent colored plate of the "juvenile" plumages of various finches.

We shall look forward with interest to the succeeding parts of this important work which should easily become the authoritative book of reference upon the British avifauna.— W. S.

Harris's 'Birds of the Kansas City Region.' — Mr. Harry Harris, already well known to the readers of 'The Auk' through his historical articles on Auduboniana, Harris's Sparrow, etc., has prepared an admirable annotated list of the birds of the vicinity of Kansas City, Mo.,¹ where he has resided for many years. The list treats mainly of Jackson County, Mo., but includes also Clay and Platte Counties in that state as well as Johnson County, Kansas and some notes from other adjacent territory.

Under each species is given a brief general statement of the character of its occurrence and then follows an account of its distribution, migration, etc., and some information upon habits, running sometimes to half a page or even more. At the end is a list of species arranged according to time of occurrence, with migrants in order of their arrival in the spring; and also an excellent bibliography.

Mr. Harris's writings are characterized by their high literary quality and great care in editing, and we only wish that all writers would follow his example in these respects.

The paper is a welcome contribution to the ornithology of a region that has not received much detailed attention in the past and it should do much to stimulate bird study throughout the Kansas City region. As a composition and a piece of printing it may well be taken as a model by those contemplating similar lists.

There is one point which calls for comment and that is the quotation of the names given in the 'Lists of Proposed Changes in the A. O. U. Check-List' which are published each year in 'The Auk,' although the author is to be commended for giving them only as alternates to the names in the last edition of the 'Check-List.' Curiously enough he seems to have entirely misunderstood these lists and quotes the names as "proposed" at the dates on which the lists were published. They are simply changes "proposed" by various writers at various times prior to the issue of the list, but usually during the previous year, and are brought together simply for the convenience of the A. O. U. Committee and others who wish to

¹ Birds of the Kansas City Region, Harry Harris. Transactions of the Academy of Science of St. Louis. Vol. XXIII, No. 8., pp. 219-371. Issued February 27, 1919. With an introduction (pp. 213-218) by Ralph Hoffmann.

investigate problems of nomenclature. Some of them will probably be adopted and many of them rejected. Dr. Oberholser does not "propose" them for adoption but is simply listing them. In the reviewer's opinion we should adopt in our lists of North American birds the nomenclature of the A. O. U. 'Check-List' until a new edition appears, the names we use then have a meaning to those who constitute the great majority of our readers, otherwise they do not. This is, however, an explanation and not a criticism, as Mr. Harris has properly and consistently used the A. O. U. 'Check-List' names as his main headings.— W. S.

Baileys' 'Wild Animals of Glacier National Park.' — This excellent publication¹ of the National Park Service gives us an authoritative account of the birds and mammals of one of the most interesting of the National Parks. Mr. Bailey, Chief Field Naturalist of the Biological Survey, has prepared a most interesting account of the mammals, treating of their habits and distribution, largely from his own extensive experience. The bird portion by Mrs. Bailey, the well known author of the 'Handbook of the Birds of the Western United States,' is equally well done and places the visitor to the park in possession of just the information that he will desire in order to add to the interest of his trip and to place him in the position of knowing which of his observations may be worthy of permanent record. The keys for identification and the numerous half-tone illustrations from the authors' 'Handbook' and the publications of the U. S. Biological Survey, add greatly to the practical value of the report as well as to its attractiveness. The work, however, is much more than an ornithological guidebook, for Mrs. Bailey has consulted all the literature on the region as well as unpublished data and has thus compiled a report that is a valuable contribution to American ornithological literature, reminding one in many respects of the early faunal reports of the Biological Survey published under the direction of her brother, Dr. C. Hart Merriam.

We only hope that the success of this publication may warrant the Government in preparing similar reports upon the fauna of the other National Parks for many of which, curiously enough, we have scarcely any ornithological publications. Such a report as this on the mammals and birds of the Grand Cañon or the Yosemite would be a most welcome volume.— W. S.

Moseley's 'Trees, Stars and Birds.' — This novel little book² has

¹ Wild Animals of Glacier National Park. The Mammals, with Notes on Physiography and Life Zones. By Vernon Bailey. The Birds, by Florence Merriam Bailey. Dept. of the Interior, National Park Service, Washington. 1918. Government Printing Office. 8vo, pp. 1-210, numerous illustrations. Price 50 cents, apply Supt. Documents, Govt. Printing Office.

² Trees, Stars and Birds. A Book of Outdoor Science by Edwin Lincoln Moseley, A. M. Illustrated in colors from paintings by Louis Agassiz Fuertes and with photographs and drawings. World Book Company, Yonkers-on-Hudson, New York, 1919, pp. i-viii + 1-404, + i-xvi, over 300 illustrations. Price, \$1.40.

been prepared by Prof. Moseley as a school field and text book, but will prove of much service to many other classes of field students. The section on trees is especially suitable for autumn use, that on stars for winter and the bird chapters for spring, the whole designed to encourage students to observe and think for themselves. The plan is well conceived and well carried out, with many practical suggestions, pertinent questions and helpful lists of reference works. Better than all, in a work of this sort, each section has been submitted to a number of competent critics who have read the text and offered suggestions.

Taking up the section devoted to birds, we start with some practical suggestions for bird study in the field and then, beginning with the Thrushes, the various groups are considered in systematic order, while chapters on migration, classification, attracting birds, etc., are interspersed as we proceed. The work treats almost entirely of the birds of the Northern and Eastern States, and the extralimital species which are mentioned here and there have not always been wisely selected. The Russet-backed Thrush, the merest variety of our Olive-back, is referred to but no mention is made of the very distinct Varied Thrush, and again there is mention of the Florida Wren which only a specialist would recognize as in any way different from the Carolina Wren, while the Gnatcatcher is omitted altogether. It would we think have been better to have adhered rigidly to a definite geographic area. The same criticism also extends to the colored illustrations. There seems to be no excuse for introducing such species as the California Jay and Black-headed Grosbeak in a work where the other typical western birds are omitted, while worse yet is the labelling of the picture of the Bronzed Grackle, "Purple Grackle" and that of the Prairie Horned Lark, "Horned Lark." With such a wealth of admirable illustrations, too, it is hard to understand why such a wretchedly crude cut as that of the Summer Tanager on its nest should have been included. However, these are but minor points in an admirable book which cannot be too widely introduced into the schools of the east and which could well serve as a model for a similar work on western birds. Our country is too large to attempt to make one text book cover its entire area. The colored plates are mainly those published some years ago by the U. S. Biological Survey in the bulletin 'Fifty Common Birds of Farm and Orchard' and are admirably printed.— W. S.

Miss Ball's 'A Year With the Birds.' — Still another popular bird book¹ which has appeared recently is Miss Ball's 'A Year With the Birds' consisting of a collection of the best poems which have been written about birds together with a number of original verses by the author treating of the other familiar species. These embody the characters of the various

¹ *A Year With the Birds*, by Alice E. Ball, Illustrated by Robert Bruce Horsfall. 57 Colored Plates. Dodd, Mead and Company, New York City, 1918, Svo. pp. 1-191. \$3.00.

birds to a remarkable degree and the songs and call notes are usually brought into the verse in a very clever manner. Poems are often remembered where prose is forgotten and are moreover particularly attractive to many persons, especially children, so that Miss Ball's book will carry the message of bird study to many who would probably not otherwise receive it.

The various species are arranged in the order of spring arrival beginning with the residents and winter visitants, while tables of arrival and departure dates are interspersed. The numerous colored plates make the work an attractive picture book. Many of these are from the leaflets of the National Association of Audubon Societies, and are referred to in the preface as "Audubon plates" — a rather confusing term — while the rest are drawn by Mr. Bruce Horsfall especially for this work. We trust that Miss Ball's work will meet with the appreciation that it deserves.— W. S.

Gilmore's 'Birds of Field, Forest and Park.' — This attractively gotten-up book ¹ is intended to give the would-be nature student an intimate knowledge of our wild bird life. It is distinctly popular in character and covers the birds of the eastern United States as observed by the author at his home in Maine, as well as in New York, New Jersey and "in the Southern States." While usually careful to mention localities the writer occasionally forgets to tell us to which region his observations pertain, an important matter in a work of such wide scope.

Mr. Gilmore is an entertaining writer and a good observer and his accounts of the habits of the birds he has personally observed are well done and full of interest, and especially attractive are the chapters entitled "In the Orchard" and "The Wilderness in June" where the attempt at systematic arrangement of the subject matter is abandoned and he writes of nature as he finds her.

There is always a field for nature books which stimulate the interest of the reader and the main text of Mr. Gilmore's book will give much pleasure and information to a wide circle of readers.

Unfortunately where he has had occasion to compile his information and to write upon the wider problems of ornithology his results have not been so happy — indeed the first two chapters, being largely of this character, could, it seems to us, have been omitted with advantage in a work of this kind. It is here that we find a number of unfortunate statements. Young Grackles, for instance, do not have "spotted coats," nor does the young male bird in species in which the sexes differ in color, "resemble the father, and the young female the mother;" while we cannot agree that in the

¹ *Birds of Field, Forest and Park*, By Albert Field Gilmore, with a Foreword by T. Gilbert Pearson, Secretary of The National Association of Audubon Societies, with Illustrations by R. Bruce Horsfall and Louis Fuertes. The Page Company. Boston, MDCCC-XIX, 8vo., pp. i-xii+1-318, numerous half-tone and several colored plates. \$2.50 net.

Sparrow family "there is little or no difference in the colors of the male and female," the Rose-breasted Grosbeak, Blue Grosbeak, Indigo Bunting and Nonpareil being familiar examples to the contrary. Perching birds, the author tells us, have "short legs with slender toes having many joints, the better to cling to the perch," but he will find that the other groups with which he contrasts them have just as many "joints," birds being remarkably constant in this respect and the exceptions few. Again we are told that in the autumn the gay suits of the males of many species "are doffed and sober colored coats better adapted for travel are put on." Had the author paused to think he must have realized that these very birds had traveled successfully in their brilliant spring garb on the northward flight and he would have sought some other reason for the change. There is throughout, a misleading use of the word "variety" for "species." These terms have distinct meanings in natural history and such careless usage tends to bewilder the reader. The author's idea of what is meant by classification is decidedly hazy, since he states that the classification of the A. O. U. is adopted, but apart from the fact that the members of some of the larger groups like the Sparrows and Woodpeckers are arranged together there is no attempt at classification whatever.

These and other misstatements can easily be corrected in another edition but it is a great pity that the book was not placed in the hands of some competent critic before publication, as was done in the case of Mr. Moseley's little work. Mr. Pearson's foreword is well enough as an exposition of the importance of bird study but it is obvious that he was not given the opportunity of reading the manuscript. The illustrations are in part from the leaflets of the National Association of Audubon Societies while others are early efforts of Mr. Fuertes which appeared originally in 'Citizen Bird' and elsewhere.—W. S.

Stephens on the Birds of San Diego County, California.—This well printed list¹ covers 320 species and subspecies which the author has established as having occurred in the county. The annotations are brief and describe the general nature of the bird's occurrence with data for rare captures, while under the family headings are given some mention of the habits of the species. Mr. Stephens is a well known authority on the birds of the region of which he writes and his list is an important addition to the literature of California ornithology. By a slip of the compositor we notice that the Nevada Cowbird appears in the Corvidæ instead of with its allies in the Icteridæ.—W. S.

Swarth on New Subspecies of *Passerella iliaca*.—An exhaustive study of the Californian Fox Sparrows leads Mr. Swarth to separate²

¹ An Annotated List of the Birds of San Diego County, California. By Frank Stephens. Transactions San Diego Society of Natural History, Vol. 3, No. 2, pp. 142-180. February 15, 1919.

² Three New Species of *Passerella iliaca*. By H. S. Swarth. Proc. Biol. Soc. Wash., Vol. 31, pp. 161-164. December 30, 1918.

three more forms making sixteen in all which he now recognizes and which occur at one time of the year or another within the state. The "thick-billed Sparrow" of the Sierra Nevada proves to be different from *P. i. megarhynca* and is therefore named *mariposa* (p. 161), type from Yosemite Park. The breeding locality of the true *megarhynca* is unknown, the specimens being all winter examples from southern California. The Warner Mountain bird is named *fulva* (p. 162) and that breeding in the White Mountains, *canescens* (p. 163).—W. S.

Annual Report of the State Ornithologist of Massachusetts.—

Mr. E. H. Forbush's last report¹ contains some novel features besides the usual account of activities in the interest of bird protection. There is a list of collections of mounted birds and skins in Massachusetts with the hours and conditions under which they may be consulted, a most valuable piece of information. These collections number no less than forty-eight.

A census of the Heath Hens on Martha's Vineyard showed 155 birds present, an increase of forty per cent over the year before, while a number of interesting photographs of this bird in its mating dance form a frontispiece to the report. Mr. Forbush has also issued an excellent circular on "Food, Feeding and Drinking Appliances and Nesting Materials to Attract Birds"² which contains more information in a small space and conveniently arranged than any similar publication that we recall.

Noble on the Birds of Newfoundland.³—Mr. Noble spent a portion of the summer of 1915 collecting specimens in Newfoundland in the interests of the Museum of Comparative Zoölogy and presents notes on 61 species. Special permission is required to collect in Newfoundland and a definite limit placed on the number of specimens of each species secured.

Mr. Noble ascertained that Newfoundland was evidently a region in which a dark coloration was beginning to develop in nesting species and he endorses the various recently described races from this country, but regards Howe's *Hylocichla fuscescens fuliginosa* as indistinguishable from the western *salicicola*.

An analysis of the avifauna shows thirteen species in Newfoundland which are unknown in Labrador, and twenty which occur in Labrador but not in Newfoundland, while six others are common in Newfoundland and rare in Labrador.—W. S.

Chubb on New South American Birds.⁴—In the January number of

¹ Eleventh Annual Report of the State Ornithologist. By Edward Howe Forbush. For the Year 1918. From the Annual Report of the State Department of Agriculture. December 20, 1918, pp. 1-21.

² Circular 2, Mass. State Department of Agriculture, pp. 1-31, September, 1918.

³ Notes on the Avifauna of Newfoundland. Bull. Mus. Comp. Zool. LXII, No. 14, pp. 543-568.

⁴ Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part I. Tinamidae—Rallidae. By Charles Chubb. The Ibis, January, 1919, pp. 1-55.

'The Auk,' mention of the new species described in this paper was made in noticing the number of 'The Ibis' in which it appeared. An examination of the paper in detail is somewhat disappointing and exhibits an element of carelessness that is quite unexpected when we consider the author and his opportunities. It is regrettable in the first place that Mr. Chubb has seen fit to consider such a wide extent of country in one paper. It is almost impossible to keep in mind the details of distribution and the literature of the subject unless we consider one region at a time. In this way too, we learn better what are the probable areas in which differentiation may be expected.

In this paper, although the fact is not indicated in the title, the author describes some new birds from Colombia, and, doubtless because this was somewhat incidental, he apparently forgot Dr. F. M. Chapman's painstaking work upon the avifauna of that country. The result is that he was not aware that Dr. Chapman had shown that most of Goudot's specimens came from the region of the Quindio Pass and not from Bogota, so that in describing his new form of *Chamaepetes* he has apparently redescribed the type race, that from Bogota being the unnamed one, if the two are really distinct.

In his treatment of *Odontophorus*, while still failing to refer to Chapman's work, his results are decidedly more nearly in accord with it. So much so, in fact, that he recognizes the Panama race of *O. guianensis* as distinct, just as Chapman did, and in naming it as a new form he uses the same name as Chapman had previously employed for the same purpose (!) and based his name upon one of McLeannan's skins just as Chapman had done. Too much care cannot be taken in the description of new South American birds, as has been previously pointed out in these columns. So many different authors are engaged in the work that unless exceptional care is exercised it will take a great deal of painstaking research to straighten out the synonymy and correct the slips that have been made.—W. S.

The Ornithological Journals.

Bird-Lore. XXI, No. 2. March-April, 1919.

The Warblers of Central New York. By Arthur A. Allen.—Photographs of the Cerulean, Mourning, Chestnut-sided and Blackburnian Warblers and the Chat and an interesting account of their habits.

Notes from a Traveller in the Tropics. III. From Panama to Peru. By Frank M. Chapman.—Describes the abundant sea bird life off the coast of Peru.

Purple Martins on Stuart Acres. By F. A. Stuart. Gives the results of five years of bird protection on a Michigan Farm. 1400 bird boxes have been erected. For Martins there were ten boxes in 1914 occupied by 46 pairs of birds, while in 1918 there were 222 pairs of these birds. One hundred and eleven species of birds have been noted on the estate, either as residents or transients.

Another Purple Martin Roost in the City of Washington. By Harry C. Oberholser.—A further account of the birds described in 'Bird-Lore' for 1917.

The migration and plumage articles describe the Crows, with a colored plate by Fuertes as a frontispiece. In this illustration the difference in size of the bill of the Common Crow and Fish Crow is certainly exaggerated and the latter species lacks the greenish lustre that is characteristic of it, but it is very difficult to get the proper color values in attempting to reproduce these glossy plumages.

The Condor. XXI, No. 2. March-April, 1919.

Nesting of the Rocky Mountain Creeper. By W. C. Bradbury. With excellent photographs of the nest and eggs.

Albert Mills Ingersoll.—An Autobiography.

Notes on the Breeding Habits of the Red Crossbill in the Okanagan Valley, British Columbia. By J. A. Munroe.—Eggs were deposited in March.

Notes on the Nesting of two Little-known Species of Petrel. By George Willett.—*Pterodroma hypoleuca* and *Oceanodroma tristrami* on Laysan Island.

Bird Notes of a Stormy May in Colorado Springs. By Edward R. Warren.

Losses Suffered by Breeding Birds in Southern California. By H. A. Edwards.

Olive Thorne Miller. By Florence Merriam Bailey

Bird Records from the Sacramento Valley, California. By Alexander Wetmore.

Notes from the Feather River Country and Sierra Valley, California. By Joseph Mailliard.

The Marital Tie in Birds. By Loye Holmes Miller.—This is a paper that every student of bird life should read and seldom has the inability of the average observer to properly interpret animal behavior been more clearly explained. Prof. Miller is discussing Mr. F. C. Willard's paper in the October 'Condor,' "Do Birds mate for Life?" which has already been commented upon in these columns. He argues with much force that there is no reason whatever to expect the marital relation in birds to last more than one year while there are many reasons why it is improbable that a bird remates with the same individual. He cleverly shows that the duration of the marital tie is really for the period during which the young are dependent upon parental care. In human beings this, with a normal family, will extend over a period of forty years or more, while in birds it is merely a few months. Why therefore try to impose upon birds human conditions?

The Summer Birds of Hazelton, British Columbia. By P. A. Taverner.

The Ibis. XI, Series I, No. 2. April, 1919.

Some Notes on *Hieraaëtus ayresi* Gurney Sen. (*Lophotriorchis lucani*

Sharpe et auctorum). By C. G. Finch-Davies.—This species and not *H. spilogaster* occurs in South Africa.

Notes on certain recently described Subspecies of Woodpeckers. By H. C. Robinson.

Some Notes on Oriental Woodpeckers and Barbets. By E. C. Stuart Baker.—An important review of many groups in which *Picus canus ricketti* (p. 187), Fokien, China, is described as new.

Notes on Birds observed in Palestine. By A. G. L. Sladen.

A note on the Buzzards of the Ethiopian Region. By W. L. Sclater.

Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part II. Podicipediformes—Accipitri-formes. By Charles Chubb.—*Oreophilus ruficollis simonsi* (p. 262), Challapata, Bolivia, is described as new.

List of the Birds of the Canary Islands, with detailed reference to the Migratory Species and the Accidental Visitors. Part II. Turdidæ—Hirundinidæ. By David A. Bannerman.

Notes on the Height at which Birds migrate. By Collingwood Ingram.—Capt. Ingram, serving with the Royal Air Force in France, presents his observations upon birds observed from aeroplanes. His highest record is 15,000 ft.

Obituary. Frederick DuCane Godman; Theodore Roosevelt, Giacomo Doria and Louis Brasil.

British Birds. XII, No. 10. March, 1919.

Notes on the Birds of a Valley in the Champagne District, France. By E. Arnold Wallis.

Observations on Birds seen in the Northeastern Atlantic Ocean, English Channel, St. George's Channel, August to October, 1917. By D. G. Garnett.—Interesting daily data on the movements of various sea birds.

The South Australian Ornithologist. IV, Part I. January, 1919.

Description of a new Subspecies of Climacteris. By J. W. Mellor. *C. erythroptus parsonsi* (p. 5) South Australia.

The Birds of the Southeastern Part of South Australia. By A. M. Morgan.

In the Pine and Mallee. By J. W. Mellor.

Revue Française d'Ornithologie XI, No. 117. January, 1919. [In French].

The Principles of Geometry Applied by Birds in the Construction of the Nest. By Dr. F. Cathelin.

Study of a Collection of Birds made by M. E. Wagner in the Provence of 'Misiones,' Argentina. By A. Menegaux (concluded).

Revue Française d'Ornithologie. XI, No. 118. February, 1919. [In French.]

Some Observations on the Nest of the Magpie. By A. Labitte.

Ornithological Articles in Other Journals.¹

Bailey, Alfred M. Observations on the Water Birds of Louisiana. (Natural History, XIX, January, 1919.)—A most interesting account of the bird refuges of the Gulf Coast of the State with a wealth of remarkable illustrations from photographs by E. A. McIlheny, Stanley C. Arthur and the author, of Terns, Gulls, Egrets, Pelicans, Geese, etc.

Bridgman, Herbert L. "Four Years in the White North." (*Ibid.*, January, 1919.)—A review of D. B. MacMillan's book with half-tone reproductions of photographs of the nesting of the Knot, its eggs and young.

Zimmer, John T. Some Notes on the Birds of South Palawan, and Adjacent Islands. (Philippine Jour. of Science, XIII, Sect. D., No. 6, November, 1918.)—An annotated list of fifty-nine species, with a description of a new species—*Acmonorhynchus affinis* (p. 384) from Palawan.

Allen, Arthur A. The Water Fowl. (American Forestry, March, 1919.)—A general account of American species with interesting illustrations from photographs including the Mallard and Pintail in the eclipse plumage.

Allen, Arthur A. The Plovers. (*Ibid.*, February, 1919.)—A similar account of the Plovers with illustrations of the Killdeer and Black-bellied Plover.

Oberholser, H. C. Description of a New *Conurus* from the Andaman Islands. (Proc. Biol. Soc. Wash., 32, pp. 29-32, April 11, 1919.)—*Conurus fasciatus abboti* (p. 29) five races of the species are recognized.

Oberholser, H. C. Mutanda Ornithologica. VI. (*Ibid.*, pp. 21-22, April 11, 1919.)—*Francolinus chinensis* becomes *F. pintadeanus* (Scopoli), *chinensis* being preoccupied; *Cuculus canorus minor* Brehm for the same reason becomes *C. c. bangsi* nom. nov. (p. 22), while *Monasa nigra* (Muller) becomes *M. atra* (Boddaert) and *Alcedo grandis* becomes *A. magalia* nom. nov. (p. 22).

Other "mutanda" by Dr. Oberholser appear in the General Notes of the Proc. Biol. Soc. Wash., pp. 46-48. Here the family name of the Wood Warblers is changed from Mniotiltidae to Compothlypidae; according to the author's views *Eumyias* must change back again to *Stoporala* and *Passerherbulus lecontei* becomes *P. caudacutus*, the latter change is however only necessary if we adopt Dr. Oberholser's extreme views on generic subdivision, if we follow the A. O. U. Check-List no change is required.

Perkins, R. C. L. On a New Genus and Species of Birds of the Family Drepanididae from the Hawaiian Islands. (Ann. and Mag. Nat. Hist., (9), III, pp. 250-252, March, 1919.)—*Dysmorodrepanis* (p. 250), *D. munroi*

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

(p. 251), from Kaiholena Valley, Lanai, at 2000 ft. elevation. Only one specimen obtained, though Mr. Monroe, the collector, thought he had seen others on one or two occasions. It is allied to *Psittacirostra*.

Lönnberg, Einar. Notes on Some Interesting East African Birds. (Archiv. for Zoologi XI, No. 5, pp. 1-5, 1917.) — A Collection made at Elgon and Loudiani B. E. A., by Dr. Leo Bayer. *Astur tachiro tenebrosus* (p. 2) and *Zosterops bayeri* (p. 3) both from the latter locality are described as new. [In English.]

Lönnberg, Einar. Birds Collected in Eastern Congo by Captain Elias Arrhenius (*Ibid.*, X, No. 24, pp. 1-32). — A list of 184 species of which *Accipiter beniensis* (p. 13) and *Neocossyphus rufus arrhenii* (p. 31), both from Beni, are described as new.

Oberholser, H. C. Diagnosis of a New Genus of Bucerotidae. (Jour. Wash. Acad. Sci. IX, No. 6, pp. 167-168.) — *Platycorax* (p. 167), type *Buceros semigaleatus* Tweeddale. Inasmuch as the number of genera to be recognized is purely a matter of personal opinion and no "proof" is possible we much prefer the expression "appears to be" distinct, rather than "proves to be" which latter Dr. Oberholser and some others employ.

Hanna, G. Dallas. Notes on Birds of the Pribilof Islands. (Jour. Wash. Acad. Sciences, IX, No. 6, March 19, 1919.) — A brief mention of seventeen species new to the Pribilofs and four new to North America, i. e., *Eunetta falcata*, *Heteroscelus brevipes*, *Thalassoaëtus pelagicus* and *Anthus spinoletta japonicus*. It is unfortunate that such important matter should be first published in such an obscure manner.

Oberholser, H. C. Birds of a Washington City Dooryard. (The Amer. Midland Naturalist, VI, pp. 1-3.) — A remarkable list of 100 species, occurring at the author's home in Washington; many, however, were heard or seen flying over. The list covers a period of seven years. Both nomenclature and classification differ from the A. O. U. 'Check-List' but vernacular names are given which are essentially those of the 'Check-List.' Both the Parula and Northern Parula are listed, based upon sight records of a single individual of each!

Gladstone, H. S. Birds and the War. (Nature, No. 102, pp. 488-489, 1919.) — Discusses effects on bird life direct and indirect: The impossibility of feeding birds and wartime restrictions against the practice; the uprising of farmers against birds as destroyers of crops and the efforts to overcome the erroneous impression; effect of noises and of aeroplanes in frightening birds, etc.

Maxwell, Hubert. Note on Supposed Fascination of Birds. (Nature, March 6, 1919.) — Considers that the fantastic actions of the Stoat are not carried on with the intention of killing the bird at all. A similar note (*Ibid.*, February 20, p. 486) describes Australian birds excited by a coiled whip which they took for a snake, though they probably had never seen a snake. The writer argues that the fear of snakes is purely hereditary and cites as a parallel the actions of chickens when a hawk or aeroplane passes over them, although they had never been attacked by a hawk.

Waite, Edgar R. Feeding Habits of Nestling Bee-eaters (Nature, March 6, 1919.) — In a Papuan species the young are said to defecate in the tunnel. Flies are attracted and their eggs hatched in the mass develop larvae upon which the young feed.

Hilden, Aremas and **Stenbäck**, K. S. On our knowledge of the Daily Fluctuation in the Body Temperature in Birds. (Skandinav. Archiv. fur Physiologie, XXXV, pp. 382-413. 1916.)

Publications Received.—Alabama Bird Day Book, 1919. Issued by the Department of Game and Fish. John H. Wallace, Commissioner. Miss Sophia Watts, Secretary.

Allen, Arthur A. (1) The Plovers. (American Forestry, February, 1919.) (2) The Waterfowl. (*Ibid.*, March, 1919.)

Bailey, Vernon, and **Bailey**, Florence Merriam. Wild Animals of Glacier National Park. Department of the Interior, National Park Service, 1918, pp. 1-210. Numerous halftone illustrations and map. Price 50 cents from Supt. of Documents, Govt. Printing Office, Washington, D. C.

Ball, Alice E. A Year with the Birds. Illustrated by Robert Bruce Horsfall, 57 Colored Plates. 8vo. pp. 1-191, Dodd, Mead and Co., New York City, 1918. \$3.00 net.

Forbush, E. H. (1) Eleventh Annual Report of the State Ornithologist for the Year 1918. Mass. State Department of Agriculture, 1919. (2) Food, Feeding and Drinking Appliances and Nesting Material to Attract Birds. State Department of Agriculture, Circular No. 2, 1918, pp. 1-31.

Chubb, Charles. (1) Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part I. Tinamidae — Rallidae. (The Ibis, January, 1919.) (2) Descriptions of new Genera and a new Subspecies of South American Birds. (Ann. and Mag. of Nat. Hist., Ser. 9, Vol. II, July, 1918.) (3) Notes on the Family Dendrocolaptidae, with Suggestions for its Division. (*Ibid.*, Vol. III, March, 1919.)

Gilmore, Albert Field. Birds of Field, Forest and Park. With a Foreword by T. Gilbert Pearson, with Illustrations by R. Bruce Horsfall and Louis Fuertes. The Page Company, Boston, 1919. 8vo., pp. 1-318. \$2.50 net.

Harris, Harry. Birds of the Kansas City Region. With an Introduction by Ralph Hoffmann. (Trans. Acad. Sciences of St. Louis, Vol. XXIII, No. 8, pp. 213-371.) February 27, 1919.

Lönnberg, Einar. (1) Birds Collected in Eastern Congo by Captain Elias Arrhenius. (Arkiv. for Zoologi K. Svenska. Vetenskapsakad., Band 10, No. 24, 1917.) (2) Notes on Some Interesting East African Birds. (*Ibid.*, Band II, No. 5.) (3) Hybrid Gulls. (*Ibid.*, Band 12, No. 7, 1919.)

Moseley, Edwin Lincoln. Trees, Stars and Birds. A Book of Outdoor Science. Illustrated in Colors from Paintings by Louis Agassiz Fuertes

and with photographs and drawings. 12mo., pp. 1-404. World Book Company, Yonkers-on-Hudson, New York. \$1.40.

Oberholser, H. C. (1) *Mutanda Ornithologica*. VI. (Proc. Biol. Soc. Wash., 32, pp. 21-22, April 11, 1919.) (2) Description of a New *Conurus* from the Andaman Islands. (*Ibid.*, pp. 23-32, April 11, 1919.) (3) General Notes. (*Ibid.*, pp. 45-48.)

Stephens, Frank. An Annotated List of the Birds of San Diego County, California. (Trans. San Diego Soc. Nat. Hist., Vol. 3, No. 2, pp. 142-180. February 15, 1919.)

Witherby, H. F. A Practical Handbook of British Birds, edited by H. F. Witherby. Illustrated with Colored Plates and Numerous Text Figures. Part I. March 3, 1919. Price 4s. net per part. Witherby & Co. 326 High Holborn, London.

Ardea, VII, No. 4, December, 1918.

Audubon Bulletin, The, Winter 1918-1919. Illinois Audubon Society.

Avicultural Magazine, (3) X, Nos. 4, 5, and 6, February, March and April, 1919.

Bird-Lore, XXI, No. 2, March-April, 1919.

British Birds, XII, Nos. 9, 10, and 11, February, March and April, 1919.

Bulletin of the American Game Protective Association, 8, No. 1, January, 1919.

Bulletin of the British Ornithologists' Club, Nos. CCXL-CCXLI, February and March 31, 1919.

Bulletin of the Charleston Museum, XV, Nos. 2, 3 and 4, February, March and April, 1919.

Cassinia, 1918 (April, 1919).

Condor, The, XXI, No. 2, March-April, 1919.

Ibis, The, (II) I, No. 2, April, 1919.

Journal of the Museum of Comparative Oölogy, I, No. 1-2 (double number), March 26, 1919.

Natural History, XIX, Nos. 1 and 2, January and February, 1919.

Oölogist, The, XXXVI, No. 3 and 4, March and April, 1919.

L'Ornithologiste, XVI, 1918-1919, Nos. 1 to 6, October 1918-March, 1919.

Philippine Journal of Science, The, XIII, Sec. D, No. 6, November, 1918.

Revue Française d'Ornithologie, XI, Nos. 117-119, January, February and March, 1919.

Scottish Naturalist, The, No. 85-86, January-February, and No. 87-88, March-April, 1919.

South Australian Ornithologist, The, IV, Part I, January, 1919.

Wilson Bulletin, The, XXXI, No. 1, March, 1919.

Zoölogical Society Bulletin, XXII, No. 1, January, 1919.

CORRESPONDENCE

EDITOR OF 'THE AUK':

It is disappointing to find (Auk, April, 1919, pp. 317-318) that even so careful a reader and reasoner as yourself has failed to grasp my meaning, and the principles that I have attempted to put in practice. If you have failed in understanding me it can be expected that there is further misinformation abroad regarding my aims and methods. Whether this is my fault or that of others, a further statement seems necessary.

You are quite correct when you state that I do not agree to the slightest abandonment of the subspecific principle. Neither am I a binomialist in the common sense of the term, as I hold that the trinomial is the only logical form of name for subspecific races. That I differ with some as to the exact *degree of differentiation* it is *expedient* to recognize in this manner and think that in the past the subspecific fact has been given undue prominence over the specific one, are matters of detail and do not interfere with any generally accepted fundamental principles.

When however you say,—“Mr. Taverner would use this binomial for *some one race* (seen but not positively determined) of *M. melodia*” you are attributing to me sentiments that I do not hold, and I have expressed myself but poorly if you can base them on anything I have said or on examples I have furnished. On the contrary I have consistently applied the binomial *collectively to all the races* of a species, lumping them under the specific title and using the trinomial for *each* of the constituent subspecies. In this I have followed to the letter the principles of the A. O. U. as exemplified in the Check List of 1910 and am in harmony with all who believe in representing the first described race by a trinomial name. The use of the binomial specific heading is an old one, sanctioned by the occasional practice of writers of repute, notably yourself. I have therefore only used a recognized form in a recognized manner, departing from current practice only in its freer use.

You suggest that where the exact subspecific status is doubtful, the abbreviation *subsp?* can be used as indicative of the fact. I grant it, but submit that it is redundant. According to A. O. U. practice there is absolutely no difference in meaning between the forms *M. melodia* and *M. melodia subsp?* except, perhaps, that a little greater emphasis is placed upon the question in the latter case. Of course to those who still cling to the nearly obsolete practice of giving the type race the specific binomial, as if the attendant subspecies were subordinate instead of coördinate divisions, there is a great difference, but this reflects a concept that the A. O. U. has already rejected.

It may be asserted with some justice that the listing of such forms as Magpie, Black Tern, Rough-leg and others as binomials savors of pedantry, as the possibility of American specimens being other than American forms

is, in the majority of cases, very small. I would say that whilst the probability is small it is not negligible. The persistence of *Larus argentatus smithsonianus* in our lists through acceptance of unverified authority, is evidence that this is a practical as well a theoretical source of error. The use of the specific term where the subspecific differentiation is not actually verified is a precaution against perpetuated error that is very cheaply applied. By its very nature it can cause no confusion, for the greater the subspecific certainty, the less necessity there is for naming it. When the probability becomes certainty, the subspecific title may be a convenience but it ceases to be a scientific necessity. The further the probability departs from certainty the more advisable subspecific designation becomes but the more cautious we should be in applying it. It would be interesting to know how often since their original description these "American" races have been examined and compared with adequate extralimital material. It would not be surprising if many of them failed to stand modern tests and were found to rest on faith rather than fact.

Your parallel between these subspecific cases and the New-world Titlark is another question. Doubt unquestionably exists with species as with subspecies and if there were as easy a way of generalizing upon them I would advocate its adoption. As there is no such neutral course I do not see that we can do other than get along as well as we can with an imperfect system. Specific difficulties of this kind are comparatively few whilst subspecific ones are legion and that we cannot correct the few former is no argument against progress with the many latter when it can be obtained by simple methods, already to hand, which have received the sanction of leading authorities and the A. O. U.

An objection that has been generally advanced against records made in the manner under discussion is that they are "unquotable." I cannot see that a definite subspecific identification made in a concrete statement in small print is any less quotable than when made by inference in a heading in heavy type. Where such identifications are not definite they certainly can not be quoted as definite. The fault, if fault there is here, lies in the writer, not in the method of presentation, for the latter certainly allows a freedom of action that has great advantages.

If there is no room in scientific literature for other than final results; if no interest lies in specific facts and distributions unaccompanied by subspecific identities, such identifications, definite specifically but indefinite subspecifically, as I have published lately are to be condemned. If however, we admit that a species is worthy of study as a species, and that statements of evidence uninfluenced by preconceptions can be presented as the basis for future generalizations rather than as finalities such lists fill a valuable place in scientific investigation. In attempting an orderly arrangement of our material we have had a tendency towards forcing of facts into pigeon holes prepared for them. The attempt to make every specimen agree with a preconceived scheme is not for the advancement of science. To call intergrading, worn, undeveloped, mutating or wandering

plumages known instead of unknown quantities will not solve zoological equations and may produce astonishing results. Our *ab*'s and *xy*'s should be recognized as such and kept separate, the former only being used in final solutions and the latter put aside for future consideration and incorporation in the problem when increased knowledge justifies. Against this there is the constant cry for exact information on the grounds that he who examines material is best qualified to pronounce upon it. Exact information is most desirable but we do not want to obtain an appearance of it by disguising a guess as a verified fact. Of course when our own knowledge or material fails there is always the alternative of submitting the problem to "authority," but the question then is, what authority and how far it should be accepted without verification. It may be admitted that some specialists, through wide experience and specially developed faculties, at times attain an almost uncanny intuition as to the identity of specimens, and their opinions even where they fail to support them by evidence convincing to others carry considerable weight, but we cannot admit that the mere dicta of even such gifted mortals should be accepted without reservation nor can their findings relieve the rest of us from the responsibility. When such determinations are to be included in our presentations they certainly should be given for just what they are, quotations of others, and their source plainly indicated, not only that due credit be given but to protect the writer and that the personality, experience and viewpoint of the authority may be estimated by the reader. For this purpose it seems to me the binomial heading and subspecific discussion in accompanying text offers the most ample opportunities without violating any of the vital principles of modern practice.

P. A. TAVERNER,

Geological Survey,
Ottawa, Canada, April 26, 1919.

[Our "misunderstanding" of Mr. Taverner's practice is we think more imaginary than real. When one sees a single Song Sparrow and being in doubt as to its subspecific identity, uses the term *Melospiza melodia*, it seems that he is using the term for "some one race" just as stated in our previous note. In many cases too he uses the binomial heading with no subspecific discussion whatever in the text, which is the practice that we particularly criticised. However, this is a trivial matter. We understand and are in sympathy with Mr. Taverner's desire to record facts and not guesses, but we still consider that his method is confusing and the use of "subsp?" is necessary if his meaning is to be made clear to the great bulk of readers. The number who do not yet understand the A. O. U. plan as practised in the last edition of the 'Check List' is vastly greater than Mr. Taverner imagines. They still think that *every* binomial indicates one sort of bird!

By introducing a system of this sort, which only a few are likely to follow,

we only cause confusion. Presently some one else will suggest another scheme and before we know it we shall have hopeless chaos and our indexes will lead us nowhere.

To those who have struggled long with the maze of published names and who by the aid of well framed codes are beginning to see the solution of that side of the nomenclatorial problem, it is discouraging to encounter well intentioned innovations such as Mr. Taverner's, and the endless activities of the genus splitter who has forgotten that a name is a name and tries to make of it a phylogenetic expression which changes with every user. There can be no rules to govern such phases of nomenclature which will always be matters of personal opinion. Why not let well enough alone?— W. S.]

NOTES AND NEWS

DR. LOUIS BRASIL, a Foreign Member of the B. O. U., who was elected a Corresponding Fellow of the A. O. U. at the last meeting, died at Caen, France, October 15, 1918, but the news of his death has only recently been received. From 'The Ibis' we learn that Dr. Brasil was born in Paris in 1865 and at the time of his death was only 53 years of age. He was brought up at Caen where he received his education and where he became Lecturer and later Professor of Zoölogy in the University. He also served as President of the Linnaean Society of Normandy.

His work included invertebrate zoölogy and geology as well as ornithology, but on the latter subject he published several important papers. He contributed the sections on Apteryges, Cassowaries, Cranes and Emus to Wyttsmann's 'Genera Avium,' 1905, and in 1914 published a little work on the 'Shore- and Water-Birds of France, Belgium and the British Islands.' Two years before his death he published a paper on the Birds of New Caledonia, containing descriptions of several new forms based on two collections made by French officers in 1865-69 and deposited in the Caen Museum. Dr. Brasil contributed several papers and short notes to the 'Revue Française d'Ornithologie' and also to 'The Ibis.' His writings and his work in general were characterized by care and accuracy.— T. S. P.

FREDERICK BRIDGHAM MCKECHNIE, an Associate of the A. O. U. from 1900 to 1911, was born in Dorchester, Mass., Sept. 19, 1882, and lived there until about 1900 when his family moved to Ponkapog, Mass. He seems always to have been interested in birds, and this move from a suburban district to Ponkapog, a small country town west of the Milton Hills, and in a setting of as wild country as there is in eastern Massachusetts, was distinctly congenial.

Graduating from the English High School of Boston in 1898, he decided to go into business, rather than to put his family to the additional expense of sending him through college; and on January 1, 1899, went to work in Yamanaka's Japanese store in Boston.

Becoming dissatisfied with the somewhat narrow possibilities and uncongenial atmosphere of his position, he decided that he would like to study landscape architecture, and entered my office as a student.

Quiet and careful, with no end of energy, he became a firstclass draughtsman. While he never pretended to be a botanist, he acquired an all-round working knowledge of the trees and shrubs of Northeastern North America, and of the garden varieties of herbaceous perennials. Superintending a good deal of planting and other outdoor work, he became an expert in the handling, planting and pruning of nursery stock, as well as in the building of roads, grading, etc. and in the handling of men.

Besides having a sharp eye, McKechnie was a very careful and reliable observer, and his ornithological records were remarkable for their neatness and scientific accuracy; his personally taken collection of New England eggs was beautifully kept; and the skins which he prepared were always particularly well made. He was also a photographer of no mean ability.

He collected a library of books on birds and mammals, and had an almost uncanny ability for unearthing rare old volumes and papers, which, with an innate Yankee propensity for trading, he usually acquired with promptness and dispatch.

He was not always successful in his quests, however, for I remember how after the death of Joseph M. Wade, McKechnie, who had known him well, spent weeks in rescuing priceless old books and papers, Wilsoniana and Auduboniana, from piles and barrels en route to the dump, to which they had been consigned by an over-efficient housekeeper, only to find that these treasures, which he had been led to believe had been left to him by Mr. Wade, belonged by rights to some heirs who were fighting in the courts over his estate. McKechnie wisely placed these papers in a safety-deposit vault, refusing to give them up to any of the unappreciative litigants, till the courts should have decided to whom they properly belonged; and then, as he could not afford to buy them himself, made arrangements whereby, through the generosity of Mr. John E. Thayer, the papers went to the Museum of Comparative Zoölogy at Cambridge, where they could be safely kept for posterity.

McKechnie had fine taste in a lot of things, and was particularly happy in his choice of friends, of whom he had many. One of the squarest men I ever met in all the years in which we worked or played together, there was never an unkind or hasty word or even thought; and I never knew him to say or do an unkind thing. No matter what he might be asked to do in the exigencies of a busy season, he did it gladly and to the best of his ability.

In the Spring of 1911, he first showed signs of breakdown, and went on a trip with A. C. Bent to Alaska and the Aleutian Islands, in the hope that

his health might be benefited. His trouble, however, proved incurable, and he died March 1, 1913, after a particularly sad and lingering illness, mourned by his family and many friends.—FRED H. KENNARD.

THE American Society of Mammalogists was organized at Washington, D. C., at a meeting held April 3 and 4, 1919. There was a charter membership of over 250, of which 60 were in attendance.

The following officers were elected: C. Hart Merriam, President; E. W. Nelson, First Vice-President; Wilfred H. Osgood, Second Vice-President; H. H. Lane, Recording Secretary; Hartley H. T. Jackson, Corresponding Secretary; Walter P. Taylor, Treasurer. The Councilors are: Glover M. Allen; R. M. Anderson; J. Grinnell; M. W. Lyon; W. D. Matthew; John C. Merriam; Gerrit S. Miller, Jr.; T. S. Palmer; Edward A. Preble; Witmer Stone; and N. Hollister, Editor. Committees were appointed on: Life Histories of Mammals, C. C. Adams, Chairman; Study of Game Mammals, Charles Sheldon, Chairman; Anatomy and Phylogeny, W. K. Gregory, Chairman; and Bibliography, T. S. Palmer, Chairman.

The policy of the Society will be to devote its attention to the study of mammals in a broad way, including life histories, habits, evolution, paleontology, relations to plants and animals, anatomy, and other phases. Publication of the 'Journal of Mammalogy,' in which popular as well as technical matter will be presented, will start this year.

The annual dues are three dollars, for which members receive the journal. Anyone qualifying before the next annual meeting will be considered a charter member.

WE learn from 'Science' that the Parliament of Quebec has created the colonies of breeding waterfowl on the shores and islands of the Gulf of St. Lawrence, including the famous Bird Rock and the Gannet rookeries on the cliffs of Bonaventure, into one great preserve to be known as the Gaspé Bird Reserves.

In a notice in the January 'Auk' Dr. Charles W. Townsend calls for notes of interest on the birds of Essex County, Mass., which may be incorporated in a supplement to his volume on 'The Birds of Essex County' published in 1905. Unfortunately the notice stated that these notes should be in hand by November 1, 1918, instead of 1919.

BIRDS IN THE MUSEUMS OF WARSAW.—In the 'Journal für Ornithologie' for April, 1918, pp. 286-287, Prof. Neumann has made an interesting statement regarding the two important collections of birds in Warsaw, Poland, belonging to the Zoological Museum of the University and the Branicki Museum.

The nucleus of the University Museum series was a collection made in Silesia by Von Minckwitz in the latter half of the eighteenth and early part of the nineteenth centuries. Both museums are rich in types of birds

from the two general regions of central and eastern Asia and certain parts of South America. The birds of Daurea, the Amur region, Kamchatka, and Korea are represented by the collections of Dybowski, Godlewski, Jankowski and Kalinowski, and form the basis of Taczanowski's great work 'Fauna ornithologique de la Sibirie orientale.' The University Museum also has some of Przewalski's types and Mlokosiewicz's birds from the Caucasus, and the Branicki Museum the Barey collections from the Transcaspian region and the Ferghana District of Turkestan.

From South America the University Museum has the collections of Jelski from Cayenne and Peru, and part of the Stolzmann material from Peru and Ecuador, while the later Stolzmann collections were deposited in the Branicki Museum. These birds formed the basis of Taczanowski's 'Ornithologie du Péron.' Stolzmann's work in Peru was continued by Jean Kalinowski whose collections were worked up by Count von Berlepsch and Stolzmann. The Branicki Museum also contains the birds obtained by Dr. Siemiradski in Argentina and Patagonia and those collected by Count Branicki in Egypt, Tunis and Algeria.

It appears that upon the approach of the German troops about 300 types and the entire collection of hummingbirds in the University Museum were sent to Russia but what disposition was subsequently made of them is not stated.—T. S. P.

THE activity of ornithologists in working up the birds of Africa is clearly shown by the fact that nearly 1000 new species and subspecies were described during the decade from 1905 to 1914. In the 'Journal für Ornithologie' for January, 1918, pp. 61-110, Dr. Reichenow has published a list of 979 new forms which have been named since the publication in 1905 of his work 'Die Vögel Afrikas.'

THE B. O. U. at its annual meeting honored several American Ornithologists. Dr. L. Stejneger was elected an Honorary Member, Dr. Joseph Grinnell and Mr. Outram Bangs, Foreign Members, and Mr. P. A. Taverner a Colonial Member. Mr. J. H. Fleming is likewise a Colonial Member though his name was accidentally omitted in a list recently published in these columns (Auk, 1918, p. 513).

SINCE the death of Dr. F. D. Godman a movement has been inaugurated by the B. O. U. to provide a suitable memorial of the work of Salvin and Godman. While the details of the plan have not yet been received it is understood that the proposed memorial will probably take the form of a gold medal to be given at certain intervals for specially meritorious work in ornithology.

EGG collecting in California seems to be developing along the lines of "Oölogical Museums." One of these, the Woodland Heights Museum of Analytical Oölogy, of which Milton S. Ray is Curator and Rose Carolyn

Ray Librarian, is located at Mr. Ray's home in San Francisco. The material consists of Mr. Ray's collection and some others which he has associated with it.

Another is the Museum of Comparative Oölogy of which Mr. W. Leon Dawson is Director and Secretary and Mrs. Etta A. Dawson Cataloguer. This consists chiefly of Mr. Dawson's collection, and that of Mr. F. C. Willard which was secured by donation. Each museum has a board of directors and list of correspondents or visitors, while the latter one has an elaborate system of fellows, patrons, members, collectors, etc., representing eight grades.

Mr. Dawson has recently issued the first number of the 'Journal' of this Museum, a pamphlet of 35 pages written entirely by himself and consisting of an advertisement of the Museum with an appeal for material and a sketch of the late R. G. Hazard, a trustee of the Museum. It is the hope of the director to secure sufficient funds to erect a museum building at Santa Barbara to house the collection which is now in temporary quarters at his home in that city.

THE 'American Museum Journal,' which under the able editorship of Mary Cynthia Dickerson has developed into one of the most important popular journals of science in America, begins its nineteenth year under the new title 'Natural History.'

This magazine, published monthly from October to May, is furnished to all members of the American Museum as one of the privileges of membership. It may also be secured at any time by subscription, at \$2.00 per year.

THE Franklin Book Shop, 920 Walnut St., Philadelphia, announces 'The Passenger Pigeon in Pennsylvania' by John C. French, edited and published by Henry W. Shoemaker; a volume of 257 pages, fully illustrated. Only 500 copies have been printed, and the work is for sale at the above address only; price \$4.00. A review will be published in the October 'Auk.'

THE Thirty-seventh Stated Meeting of the American Ornithologists' Union will be held in the American Museum of Natural History, New York City, November 11-13, 1919, with a business session of the Fellows and Members on the evening of the 10th. All members of the Society should keep the date in mind and arrange if possible to be present. The scientific sessions of the last annual meeting had to be cancelled owing to the influenza epidemic and only the business session was held, so that there will have been virtually an interim of two years since the last gathering of the Union. The cessation of the war and the return of many members from France will make the coming meeting one of the most noteworthy in the history of the organization.

The By-Laws provide that nominations to the classes of Fellows and Members shall be made in writing, signed by three Fellows or Members and delivered to the Secretary at least three months prior to the Stated Meeting. There is one vacancy in the class of Fellows and there will be opportunities for the election of 5 Members. Nominations should be in the hands of the Secretary not later than August 10 and should be accompanied by a full statement of the qualifications of the candidate including a statement of his work and a list of his publications if any. Nomination blanks may be had upon application.

